

# **Tooele Chemical Agent Disposal Facility (TOCDF)**



## **Request for a CLASS 3 MODIFICATION to the TOCDF RCRA Permit**

Request Number	TOCDF-ATT10-03-1111
Request Title	TOCDF RCRA Final Closure Plan Revision
EPA ID Number	UT 5210090002

For the

**STATE OF UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ)**

**Division of Solid and Hazardous Waste (DSHW)**

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## 1 GENERAL DISCUSSION

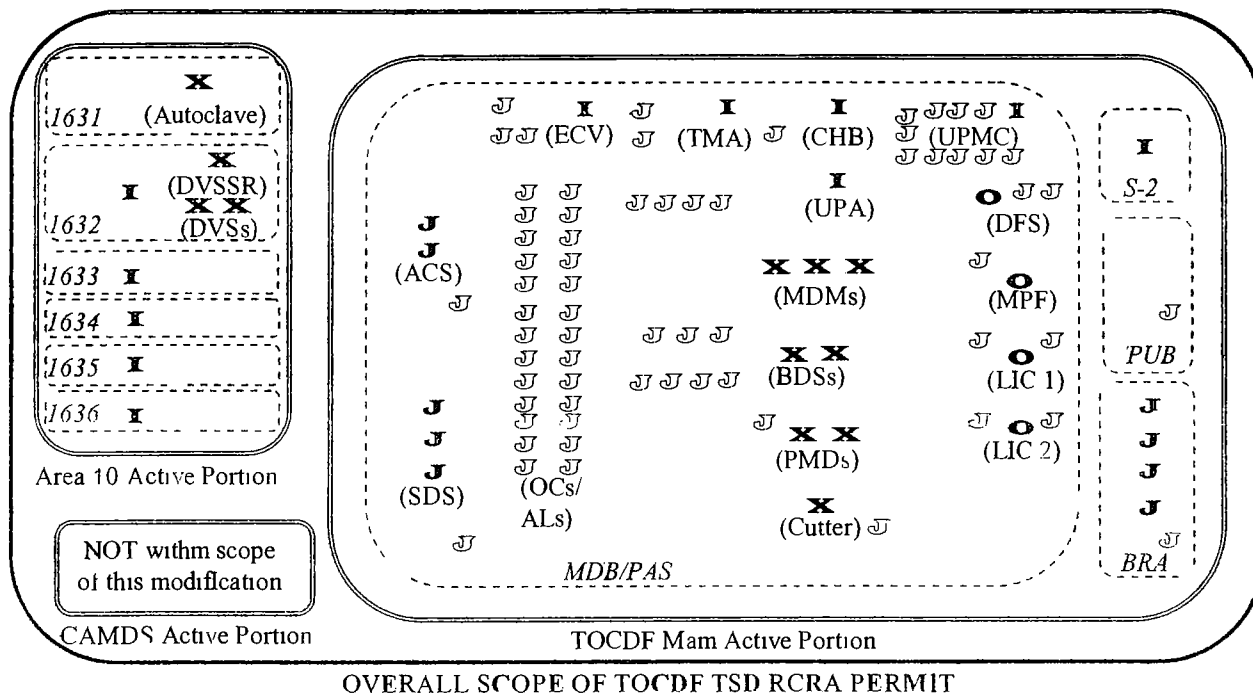
### 1.1 Background

Located on the property of the Deseret Chemical Depot (DCD) in Utah's rural Tooele County, the Tooele Chemical Disposal Facility (TOCDF) is a permitted Resource Conservation and Recovery Act (RCRA) Hazardous Waste Treatment Storage and Disposal Facility (TSDF) possessing the United States Environmental Protection Agency and State of Utah Identification Number UT5210090002. The majority of TOCDF operations take place at its main location corresponding to the TOCDF "Limited Area", which is defined as the area within the double fence surrounding the Munitions Demilitarization Building (MDB). However, there exist permitted Hazardous Waste Management Units (HWMUs) in locations that are remote from the TOCDF main facility. These somewhat "remote" HWMUs are fully incorporated within the TOCDF TSDF RCRA Permit. For the purposes of this modification, the remote HWMUs are grouped into 1) the CAMDS "portion", and 2) the Area 10 "portion".

90-day hazardous waste accumulation sites that have been established in support of managing newly-generated wastes are exempt from the "Closure" requirements and are thus not considered within the TOCDF Closure Plan.

## 1 GENERAL DISCUSSION (continued)

### 1.2 Graphical Depiction of the TOCDF TSDF



Authorizing Closure Plan	Active Portion	HWMU Type	Total HWMUs
PCRA Permit Attachment 10	TOCDF Mam	Subpart I Container Storage Area	8
		Subpart J Tank System	9 Tanks
			68 Sumps
		Subpart O Incinerator System	4
	Area 10*	Subpart X Miscellaneous Unit	8
		Subpart I Container Storage Area	5
		Subpart J Tank System	0
		Subpart O Incinerator System	0
RCRA Permit Attachment 25	CAMDS	Subpart X Miscellaneous Unit	4
		Subpart I Container Storage Area	14
		Subpart J Tank System	11 Tanks
			32 Sumps
		Subpart O Incinerator System	3
		Subpart X Miscellaneous Unit	7

\* Although not currently permitted, several HWMUs are at various stages of becoming permitted at Area 10 via a separate modification. Four (4) tank systems, one (1) incinerator system, and one (1) miscellaneous unit are proposed in addition to the numbers shown here.

RCRA Closure of these HWMUs are within the scope of Attachment 10 as proposed in this modification

RCRA Closure of these HWMUs are NOT within the scope of this modification

## **1 GENERAL DISCUSSION (continued)**

### **1.3 Regulatory Basis and Modification Classification**

This permittee-requested modification to the TOCDF RCRA Permit is submitted as a Class 3 modification based primarily on the "Other Modifications" language of 40 CFR 270.42(d)(1), incorporated by R315-3-4.3

*"In the case of modifications not explicitly listed in appendix I of this section, the permittee may submit a Class 3 modification request to the Agency, or he or she may request a determination by the [Executive Secretary] that the modification should be reviewed and approved as a Class 1 or Class 2 modification."*

40 CFR 270.42(d)(2)(iii) states that "Class 3 modifications substantially alter the facility or its operation." Since this modification substantially alters activities that will be performed during the closure of TOCDF, as well as completely reformatting the Closure Plan, it has been conservatively classified at the highest level. This ensures the maximum opportunity for public participation.

## **2 DESCRIPTION OF CHANGE AND JUSTIFICATION**

The *current* TOCDF Closure Plan, which exists as Attachment 10 of the TOCDF RCRA Permit, is laid out in a manner that generally follows the regulatory requirements point-by point and in order

The *revised* TOCDF Closure Plan, while still containmg all of the essential elements of a written closure plan, is laid out in a manner that is more m keeping with the sequence of closure events as they will occur and the decision-making process that forms the basis for the physical work requirements

The entire proposed revised TOCDF Closure Plan is presented at the end of this modification request The Plan is drafted as a self-contained document that is self-justifying

### Consistency – Attachments 10 and 25

The proposed revised TOCDF Closure Plan layout is consistent with the layout of the recently-approved CAMDS Closure Plan, which exists as Attachment 25 of the TOCDF RCRA Permit CAMDS closure activities under the authorization of Attachment 25 are currently being implemented Consistency between TOCDF Closure Plan and the CAMDS Closure Plan will enable the most effective use of site implementation procedures that have been developed at CAMDS and can be adapted for use at TOCDF

### Waste Analysis Plan – Impacts

The two Waste Analysis Plan waste streams 2 2 2 29 “Closure-Generated SDS” and 2 2 2 30 “Closure Generated Waste”, were revised in anticipation of TOCDF entering “closure” These two waste streams were originally added to the WAP in order to accommodate certain CAMDS waste streams since CAMDS has already entered closure

Waste stream 2 2 2 29 was revised to consider wastes that do not enter a tank system but are managed entirely within containers

Waste stream 2 2 2 30 was revised to enable the conservative management of any wastes generated at closure as liquid-agent exposed wastes or materials

### **3 IMPACT TO TOCDF**

The primary goal of this modification is to replace the existing RCRA Closure Plan with a newly-prepared RCRA Closure Plan that more accurately reflects the facility's physical configuration and revised closure strategy. The current RCRA Closure Plan and the proposed RCRA Closure Plan share the same end-goal of final closure primarily through removal and disposal of the overall facility (i.e., clean-closure). Since both plans are written to achieve the same end-goal, the impact of the new proposed plan versus the existing plan is negligible.

#### **Environmental Impacts**

There are no adverse impacts to the environment resulting from this modification. The final closure end-state of the proposed closure plan remains the same. The overall permitted facility equipment, buildings and structures will have been disposed as hazardous debris in an offsite permitted Subtitle C landfill, with specified exceptions.

#### **TOCDF Personnel Impacts**

There are no adverse impacts to the facility personnel resulting from this modification. The overall workforce requirements remain essentially the same.

#### **Physical TOCDF Impacts**

There are no adverse impacts to the physical end-state of the facility resulting from this modification. Although the work activities necessary to achieve the final end-state differ, the end-state does not.



# PUBLIC NOTICE

## Tooele Chemical Agent Disposal Facility (TOCDF)

Located at the U S Army's Deseret Chemical Depot (DCD), Stockton Utah

Class 3 Permit Modification Request

### *"TOCDF RCRA Final Closure Plan Revision"*

<p><b>What is the permit modification about?</b></p>	<p>The Tooele Chemical Agent Disposal Facility (TOCDF) is a Resource Conservation and Recovery Act (RCRA) permitted treatment and storage facility (TSDF). The overall mission of the TOCDF is to destroy the portion of the U S Army's chemical weapons stockpile that resides at the Deseret Chemical Depot (DCD) in addition to eliminating the inventory of secondary wastes generated in pursuit of that mission.</p> <p>TOCDF has completed destruction of the majority of the DCD chemical weapons stockpile, and is actively eliminating (e.g., treating, shipping) its inventory of secondary waste. In anticipation of completion of permitted-treatment and storage operations, TOCDF is preparing to begin formal regulatory RCRA final closure activities. Accordingly, TOCDF is revising the TOCDF RCRA Closure Plan that currently exists in the RCRA Permit as Attachment 10. This revision of the Closure Plan reflects the current physical configuration and closure strategy of the TOCDF facility which has been greatly modified since the preparation of the original Closure Plan prepared prior to permitted-operations in 1996.</p> <p>This Permit modification request is identified by the designation <u>TOCDF-ATT10-03-1111</u>.</p>
<p><b>When is the Public Meeting?</b></p>	<p>A public information meeting on this permit modification request will be held at 6:00 p.m. on Wednesday, July 28, 2010 at the Tooele Chemical Stockpile Outreach Office, 54 South Main Street, Tooele, UT 84074. The telephone number for the Outreach Office is (435) 882-3773.</p>
<p><b>Where can I find a copy of this permit modification request?</b></p>	<p>A copy of this permit modification request is available for review by the general public during regular business hours at:</p> <ul style="list-style-type: none"> <li>→Tooele Chemical Stockpile Outreach Office, 54 South Main St., Tooele, UT 84074</li> <li>→Tooele City Library Reference Desk, 128 W. Vine Street, Tooele, UT 84074</li> <li>→Utah Division of Solid and Hazardous Waste (DSHW, Department of Environmental Quality), 195 North 1950 West, Salt Lake City, UT 84114</li> </ul>
<p><b>Who can I talk to about this?</b></p>	<p>The TOCDF point of contact is Mr. Trace Salmon at (435) 833-7428. The Permittees' (U S Army Chemical Materials Agency/EG&amp;G Defense Materials) compliance history during the life of the permit being modified is available from the State of Utah [contact Mr. Tom Ball of the Utah Division of Solid and Hazardous Waste at (801) 536-0251, or via email at <a href="mailto:tball@utah.gov">tball@utah.gov</a>].</p>
<p><b>How long is the comment period?</b></p>	<p>The public comment period for this permit modification request lasts a minimum of 60 days and begins Thursday, July 1, 2010 and will end Monday August 30, 2010. Written comments regarding this permit modification request can be submitted to Mr. Scott Anderson, Director, Division of Solid and Hazardous Waste, Utah Department of Environmental Quality, P.O. Box 144880, Salt Lake City, UT 84114-4880, and must be received no later than 5:00 p.m., Monday, August 30, 2010.</p>

This public notice satisfies requirements of the Resource Conservation and Recovery Act and the Utah Hazardous Waste Management Rules (Utah Administrative Code R315)



## **5 PERMIT CHANGE PAGES**

### **Change Pages in Permit Body**

Module II, General Facility Conditions  
Pages 5 and 6

### **Change Pages in Permit Attachments**

Attachment 2, Waste Analysis Plan  
Pages 28, 29, 47 and 48

Attachment 10, TOCDF Closure Plan  
Pages 1 through 42 (all)

### **Changes to Permit Drawings** None

- II I c The Permittee shall submit a biennial report covering the TOCDF and CAMDS activities to the Executive Secretary in accordance with R315-8-5 6 and R315-3-3 1(l)(9)
- II I d The Permittee shall submit additional reports to the Executive Secretary in accordance with R315-8-5 8
- II I 2 All reports, notifications, applications, or other materials required to be submitted to the Regional Administrator shall be submitted to the State and Tribal Assistance Office, Assistant Regional Administrator to the EPA Regional address shown in Condition I AA 3
- II I 3 All reports, notifications, applications, or other materials required to be submitted to the Executive Secretary shall be submitted to the address shown in Condition I AA 2
- II J CLOSURE
- II J 1 The Permittee shall meet the general closure performance standard as specified in R315-8-7 during closure of all TOCDF and CAMDS hazardous waste management units. Compliance with R315-8-7 shall require closure of each hazardous waste management unit in accordance with Condition II J , Attachment 10 (TOCDF Closure Plan) and Attachment 25 (CAMDS Closure Plan)
- II J 2 All secondary waste generated during the processing of Agents GB, VX, and Mustard shall be processed by the Permittee prior to the completion of closure of TOCDF
- II J 3 Reserved
- II J 4 Reserved
- II J 5 The Permittee shall decontaminate or dispose of all equipment as specified in Attachment 10 (TOCDF Closure Plan) and Attachment 25 (CAMDS Closure Plan)
- II J 6 The Permittee shall provide certification statements that all each TOCDF and TOCDF-Operated hazardous waste management units and the overall TOCDF facility have been closed in accordance with the applicable specifications in Attachment 10 (TOCDF Closure Plan) and, Attachment 25 (CAMDS Closure Plan) as required by R315-8-7
- II J 7 The Permittee shall notify the Executive Secretary at least 45 calendar days prior to the closure date of any hazardous waste management unit is expected to begin
- II I 8 In the event that any hazardous waste management unit cannot be clean closed by removing hazardous waste, hazardous waste constituents, contaminated subsoil, and any contaminated groundwater as specified in Attachments 10 and 25 (Closure Plans), the Permittee shall submit the modified closure and post-closure plan for that hazardous waste management unit to the Executive Secretary, as a permit modification request, in accordance with R315-3-4, within 30 calendar days of the date that the Executive Secretary notifies the Permittee in writing that the unit shall be closed as a landfill, in accordance with R315-8-7

II J 9 Within 90 calendar days of the Permittee's receipt of the written approval from the Executive Secretary, in accordance with R315-3-4, of the modified closure plan and the post-closure plan required by Condition II J 8, the Permittee shall close the hazardous waste management unit in accordance with the approved plans

II K **CLOSURE PLAN - COMPLIANCE SCHEDULE**

II K 1 The Permittee shall close the TOCDF facility in accordance with schedules appearing in ~~submit a permit modification request that updates Attachment 10 (TOCDF Closure Plan) and Attachment 25 (CAMDS Closure Plan) in the second quarter of calendar year 2010~~

II L **EQUIVALENT MATERIALS/INFORMATION**

II L 1 For certain equipment, materials, or minor information specified in this Permit and documents listed or described in Attachment 3 (Sampling, Analytical, and QA/QC Procedures) and Attachment 23 (CAMDS LMQCP) that do not affect the analytical methods in the documents listed or described in Attachment 3 (Sampling, Analytical, and QA/QC Procedures) or described in Attachment 23 (CAMDS LMQCP) the Permittee is allowed to use the equivalent or superior equipment, materials, or minor information. Use of such equivalent or superior items shall not be considered a modification of the Permit, but the Permittee shall place in the Operating Record (prior to the institution of such revision) the revision, accompanied by a narrative explanation, and the date the revision became effective. The Executive Secretary may judge the soundness of the revision during inspections of the TOCDF and CAMDS and take appropriate action. The format of tables, forms, and figures is not subject to the requirements of this Permit and may be revised at the Permittee's discretion.

II M **FINANCIAL ASSURANCE FOR FACILITY CLOSURE**

II M 1 The Permittee is exempt from the closure financial assurance requirements, in accordance with R315-8-8 [40 CFR Section 264.140(c) incorporated by reference]

II N **LIABILITY REQUIREMENTS**

II N 1 The Permittee is exempt from the liability coverage for sudden and accidental occurrence requirements, in accordance with R315-8-8 [40 CFR Section 264.140(c) incorporated by reference]

- 2 2 2 29 Closure-Generated Spent Decontamination Solution (Excluding SAF Lab and CAMDS Monitoring Waste)
- 2 2 2 29 1 Spent decontamination solutions generated from closure activities may be managed at an off-site Subtitle C TSDF or treated in one of the TOCDF LICs in accordance with Section 2 2 1 4
- 2 2 2 29 2 Each tankbatch of spent decontamination solutions shall be sampled and analyzed for chemical agent concentration, corrosivity (pH), HRA metals, BTU ignitability, total halogens, total organics and specific gravity A batch shall be defined as containerized spent decontamination solutions that will be isolated from any additional waste being added to the tank or container prior to off-site shipment. SDS that is potentially VX contaminated shall additionally be analyzed for the VX-related constituent EA 2192 prior to off-site shipment
- 2 2 2 29 3 Spent decontamination solutions having chemical agent concentrations less than 20 ppb for GB or VX and 200 ppb for mustard may be managed at an off-site Subtitle C TSDF. If chemical agent is detected at or above 20 ppb for GB or VX and 200 ppb for mustard, additional decontamination solution shall be added to the collection tanks or containers, the contents recirculated (i.e. mixed) and another sample analyzed for agent concentration
- 2 2 2 29 4 In addition to the above requirements, the following restrictions shall apply to off-site shipments of SDS
- 2 2 2 29 4 1 Contractual restrictions shall be imposed on the transporters and off-site management facilities to ensure that the spent decontamination solutions are directly fed into an incinerator from the tanker truck to prevent commingling with other waste streams managed at the facility. As an alternative to direct tanker feed, a dedicated tank at the off-site incinerator for the spent decontamination solution may be used to prevent commingling at the off-site management facility
- 2 2 2 29 4 2 Contractual restrictions shall be imposed on the transporters and off-site management facilities to ensure that the spent decontamination solution pH is not lowered in each tanker or dedicated tank
- 2 2 2 29 4 3 The off-site treatment facilities to which SDS may be shipped are limited to hazardous waste incineration facilities
- 2 2 2 29 4 4 The off-site transporters and management facilities shall be trained in chemical agent exposure and spill response before shipment of SDS
- 2 2 2 30 Closure-Generated Waste
- 2 2 2 30 1 Waste materials exposed to liquid or aerosol chemical agent, or materials suspected or conservatively-presumed to have been liquid or aerosol exposed will be chemically-decontaminated per the decontamination steps outlined in the Attachment 10 (TOCDF Closure Plan) and Attachment 25 (CAMDS Closure plan)

- 2 2 2 30 2 The resulting decontamination final nnsate will be analyzed for chemical agents. If the agents are detected at or above 20 ug/l (ppb) GB/VX/GA or 200 ug/l (ppb) for mustard/Lewisite, repeat the decontamination procedures and reanalyze the nnsate.
- 2 2 2 30 3 The spent decontamination solution/nnsate may be processed by either
- 2 2 2 30 3 1 Treating in the TOCDF LIC 1/LIC2 primary or secondary chamber per 2 2 1 4 and analyzed for the following parameters, agent, corrosivity, percent organics, specific gravity and HRA metals or
- 2 2 2 30 3 2 Spent decontamination solutions may be sent off-site to a Subtitle C TSDF if the agent concentration is below 20ug/l (ppb) GA/GB/VX and 200 ug/l (ppb) mustard/lewisite. The waste will additionally be analyzed for TCLP metals, total organics, corrosivity. Additionally BTU content, HRA Metals and flashpoint if incinerated.
- 2 2 2 30 4 Once decontaminated, the waste will be characterized for other RCRA parameters to ensure proper waste management.
- 2 3 **PARAMETER TEST METHODS R315-8-2.4 [40 CFR 264.13(b)(2)],**
- 2 3 1 Table 2-3 provides a listing of the analytical methods that shall be used to detect and quantify the selected parameters. This information is presented in a relational format in Tables 2-0 and 2-1 (the WAP Summary Tables).
- 2 3 2 The CAL and SAF shall perform the analyses related to chemical agent listed in Tables 2-0 and 2-1.
- 2 3 3 The CAL and SAF shall be Utah-certified to perform analyses for the parameters that require Utah certification.
- 2 3 4 Off-site analyses shall be performed by a Utah-certified laboratory for the parameters listed in Table 2-3.
- 2 3 5 The off-site laboratories selected shall be certified by the State of Utah for the methods referenced in this waste analysis plan. When new promulgated methods are approved by EPA, the Permittee shall notify the off-site laboratories of the required change and request a time frame of when the change will occur. A laboratory will have six months to submit documentation to the Permittee of the change or a time frame when the change will be completed. The laboratory must use the most recently approved method within one year of promulgation. If that is not possible, a written request for extension must be provided to the Executive Secretary for approval. Only SW-846 promulgated methods shall be used unless an alternate method is approved by the Executive Secretary.
- 2 4 **SAMPLING METHODS R315-50-6 [40 CFR 264.13(b)(3)],**
- 2 4 1 The sampling methods to be used for each waste stream are found in Tables 2-0 and 2-1 (the WAP Summary Tables).
- 2 5 **FREQUENCY OF ANALYSES R315-8-2.4 [40 CFR 264.13(b)(4)],**

Table 2-1  
TOCDF WASTE ANALYSIS PLAN SUMMARY

2.2.2 WASTES REQUIRING OFF-SITE TREATMENT/DISPOSAL

WASTE STREAM	GENERATION SOURCE	ANALYTICAL PARAMETERS	PREPARATION and ANALYTICAL METHODS	FREQUENCY OF ANALYSIS <sup>5</sup> (establish profile)	SAMPLING METHOD
2.2.2.26 MSB and Monitoring Solid Waste	MSB CAMDS	Chemical Agent Concentration  See section 2.2.2.25	TE LOP 572 or TE LOP-409 412 413 416	Each container One sample of the decontamination solution collected at the bottom of the accumulation container taken for analysis	Coliwasa
2.2.2.27 Sump 110	Sump 110	Agent Concentration TCLP Metals TCLP Organics <sup>1</sup>  Corrosivity/pH	TE LOP 572 1311 and 3010 or 3015 and 6010 or 6020 and 7470 1311 and 5030 and 8260 and 3510 or 3520 and 8270  TE LOP 574 (9040)	Each tanker One sample for analysis	Coliwasa
2.2.2.28 Autoclave Treated Waste	Area 10 (Igloo 1631) Subpart X Autoclave	Agent	TE LOP 524 (Primary) TE-LOP 522 (Confirmation)	Each Batch Treated	NRT (Primary) DAAMS (Confirmation)
2.2.2.29 Closure-Generated Spent Decon Solutions	Site Closure Activities	Agent Concentration  Corrosivity (pH) HRA Metals (totals)	TE-LOP 572 or TE LOP-409 412 413 416  9040B or TE LOP 574 (9040) 3010A 7470A 6010B	Each CAMDS tank TMF 1 and TMF-2 after mixing a minimum of one-hour <b>PRIOR TO</b> transfer to CAMDS tanks T13D or T13-E tank	Tap
		Ignitability  TC Organics <sup>1</sup>  Specific Gravity BTU  Total Halogens	1010/ 1020A or 1020 or 1010  8260B 8270C or 1311 and 5030 and 8260 and 3510 or 3520 and 8270  2710F or TE LOP 574  ASTM D240 87 OR ASTM D 5865  9056 or 300 0/300 I	Each tank prior to offsite shipment after mixing a minimum of one hour <u>or one sample from each container</u>	Tap or Coliwasa

Table 2-1  
TOCDF WASTE ANALYSIS PLAN SUMMARY

2.2.2 WASTES REQUIRING OFF-SITE TREATMENT/DISPOSAL

WASTE STREAM	GENERATION SOURCE	ANALYTICAL PARAMETERS	PREPARATION and ANALYTICAL METHODS <sup>5</sup>	FREQUENCY OF ANALYSIS <sup>5</sup> (establish profile)	SAMPLING METHOD
2.2.2.30 Closure-Generated Waste (Liquid or Aerosol Agent Exposed, as defined by the corresponding Closure Plan methodology)	Site Closure Activities	Agent Concentration  RCRA Characterization parameters	TE LOP 572 or TE LOP-409 412 413 416	As generated	

Footnotes

- 1 The annotated methods identified are to be used. When new promulgated methods are approved by EPA, the Permittee shall notify the laboratory of the required change and request a time frame of when the change will occur. The laboratory will have six months to submit documentation to the Permittee of the change or a time frame when the change will be completed. The laboratory must use the most promulgated method within one year of promulgation. If that is not possible, a written request for extension must be provided to the Executive Secretary for approval.
- 2 A batch is defined as all the drums (or containers) of waste generated from the same event at the same location.
- 3 TCLP organics are defined as those compounds described by 40 CFR 261.24 by the waste codes D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, and D042.
- 4 Dioxins (PCDDs) and Furans (PCDFs) are additionally analyzed for only if waste is Toxicity Characteristic for organics.
- 5 The Permittee shall sample the organic analytical parameters using the sampling and analytical methods and frequency of analysis in accordance with section 2.10.
- 6 TCLP metals are defined as those described in 40 CFR 261.24 as waste codes D004, D005, D006, D007, D008, D009, D010 and D011.
- 7 HRA metals are defined as the following: Arsenic, Barium, Chromium, Cadmium, Lead, Mercury, Silver, Selenium, Aluminum, Antimony, Beryllium, Boron, Cobalt, Copper, Manganese, Nickel, Thallium, Tin, Vanadium and Zinc.

## ATTACHMENT 10 TOCDF CLOSURE PLAN

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## TOCDF CLOSURE PLAN

10 1

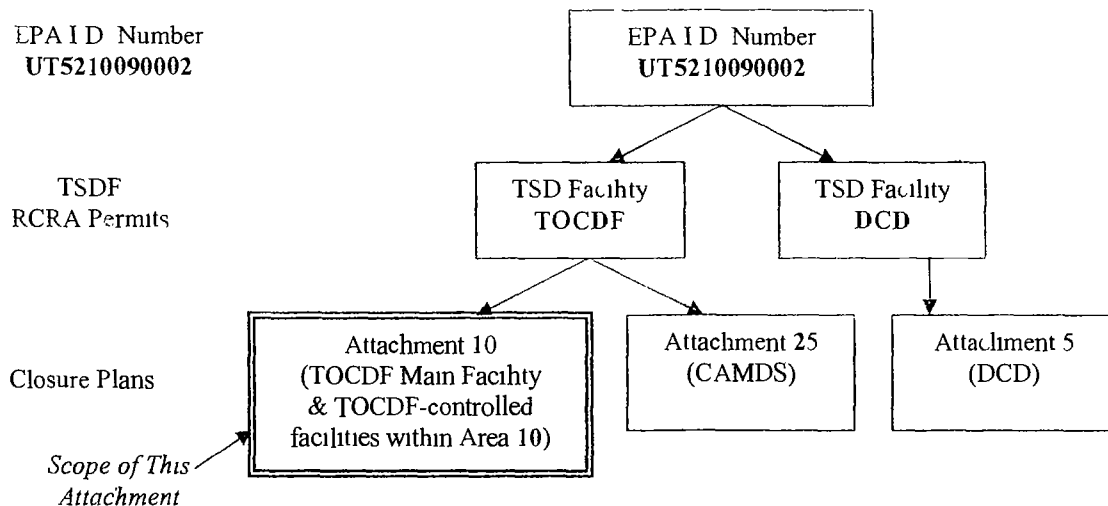
### CLOSURE PLAN OVERVIEW

This plan has been prepared for the closure of the Tooele Chemical Agent Disposal Facility (TOCDF) in accordance with Title 40 of the Code of Federal Regulations, Part 264 and Utah Administrative Code (UAC) R315-8-7

Owned by the U S Chemical Materials Agency (CMA), TOCDF is a hazardous waste treatment and storage facility co-operated by the CMA and EG&G Defense Materials, Inc , (a division of URS) In addition to being co-operators, CMA and EG&G are co-permittees of TOCDF

Although located entirely within the boundaries of the Deseret Chemical Depot (DCD), TOCDF operates as an autonomous permitted facility under the authority of its own RCRA Permit The DCD operates under a separate RCRA Permit even though the DCD and the TOCDF facilities share the same EPA ID Number of UT5210090002 Consequently, this closure plan only addresses operations directly associated with TOCDF In order to complete closure of the entire UT5210090002 installation, DCD closure operations will be addressed within a DCD Closure Plan entirely separate from this TOCDF Closure Plan and the CAMDS Closure Plan

This plan describes general closure requirements for the TOCDF Facility, which includes multiple individual hazardous waste management units (HWMUs) included in this permit, but does NOT include those HWMUs subject to the provisions of Attachment 25 (CAMDS Closure Plan)



This closure plan was prepared for the TOCDF-controlled facilities (except the CAMDS active portion) and will result in conditions protective of human health and the environment during and after closure The ultimate goal of this plan is to present the processes that will enable the TOCDF Facility to be closed in a manner that minimizes the need for further maintenance, and minimizes, controls, or eliminates post closure escape of hazardous wastes or their constituents into the environment

10.1.1

### Closure Status

Since the beginning of chemical agent permitted-treatment operations in 1996, various permitted HWMUs have been removed and RCRA-closed as 1) certain "treatment campaigns" were completed and the equipment became obsolete, or 2) the equipment was no longer useful for its originally-intended purpose.

HWMUs that have heretofore attained and been granted formal "closure" status no longer appear in the RCRA Permit as permitted-HWMUs (e.g., Subpart X Rocket Shear Machine, the Subpart O Dunnage Incinerator, etc.). However, obsolete HWMUs that have NOT been granted formal closure status AND that still appear in the Permit will, for the purposes of this closure plan, be considered active HWMUs regardless of whether they are still in-place or if they have been partially or fully disassembled. Hence, all currently-operating or previously-operated permitted HWMUs are considered "active." Only those previously-operated HWMUs that have been granted formal closure-status by the Utah Department of Environmental Quality (DEQ) Division of Solid and Hazardous Waste (DSHW) will be considered "RCRA-closed."

10.1.2

### Closure Plan Document Structure

Contents of the remainder of Attachment 10, TOCDF Closure Plan include:

10.2 *Closure Performance Standard* provides the performance standards for the closure of hazardous waste management units. This section also provides details for the determination of whether closure performance standards have been met for closed RCRA permitted units.

10.3 *Maximum Waste Inventory* lists the maximum inventory of waste stored at any time at the facility.

10.4 *Facility Closure Methodology* describes the overall approach for closure including the overall closure sequence, a description of the decontamination methods to be utilized, and the overall schedule to complete closure activities.

10.5 *Closure Waste Management* describes the methods which will be utilized for managing the hazardous wastes generated during closure.

10.6 *Ground Water Monitoring and Run-on and Run-off Control* describes the run-on and run-off control that will be employed during closure.

10.7 *Closure Plan Cost Estimate* documents that financial assurance is not applicable to TOCDF.

10.8 *Post Closure* describes the requirements for post-closure care of the facility.

10.9 *Certification of Closure* states that closure will be certified according to the approved Closure Plan by an independent, qualified, registered professional engineer.

10.10 *Corrective Action for Solid Waste Management Units* describes the activities that may need to be taken to comply with 40 CFR 264.101.

10.1.3 Key Definitions

The following terms are used frequently throughout this closure plan. 40 CFR 260.10 is incorporated by Utah Administrative Code (UAC) R315-1-1(b) and 40 CFR 268.2 is incorporated by UAC R315-13-1.

- 10.1.3.1 *Active Portion* means that portion of a facility where treatment, storage or disposal operations are being or have been conducted and which is not a closed portion (§260.10).
- 10.1.3.2 *Ancillary Equipment* means any device that is used to distribute, meter, or control the flow of hazardous waste from its point of generation to a storage or treatment tank(s), between hazardous waste storage and treatment tanks to a point of disposal onsite, or to a point of shipment for disposal off-site (§260.10). For the purposes of this closure plan, secondary containment systems and Subpart CC air emissions control devices/closed-vent systems are included within this definition regardless of the fact that they do not directly contact the hazardous waste being managed by the HWMU.
- 10.1.3.3 *Clean Closure* means achieving the general and technical closure performance standards by removing hazardous waste from the facility or HWMU and then decontaminating (i.e., removing contaminants from permitted operations) the facility or HWMU such that no post-closure care is required. The TOCDF facility, including all of its HWMUs will be “clean-closed” in accordance with this plan.
- 10.1.3.4 *Closed Portion* means that portion of a facility which has closed in accordance with the approved facility closure plan or a specific partial closure plan and all applicable closure requirements (§260.10).
- 10.1.3.5 *Debris* means solid material exceeding a 60 mm particle size that is intended for disposal and that is
- 1) a manufactured object, or
  - 2) plant or animal matter, or
  - 3) a natural geologic material (§268.2)
- 10.1.3.6 *Decontamination* means the act of removing some or all hazardous waste residues or contaminants “contained in” equipment, buildings or structures by use of one or more of the following technologies: physical extraction, chemical extraction, thermal extraction, biological destruction, thermal destruction, chemical destruction.
- 10.1.3.7 *Facility* means all contiguous land, and structures, other appurtenances, and improvements on the land, used for treating, storing or disposing of hazardous waste. The TOCDF “facility” includes multiple treatment and storage operational units (i.e., HWMUs), some of which are detached (i.e., Area 10 igloos) (§260.10). “*Approved hazardous waste management facility*” or “*approved facility*” means a hazardous waste TSDF which has received an EPA permit in accordance with federal requirements, has been approved under Section 19-6-108 of the Utah Code and R315-3, or has been permitted or approved under and other EPA authorized hazardous waste state program [R315-1-1(f)(1)].
- 10.1.3.8 *Final Closure* means the closure of *all* HWMUs at the facility in accordance with all applicable closure requirements so that hazardous waste management activities under

parts 40 CFR 264 and 265 are no longer conducted, unless subject to the [90-day accumulation] provisions of §262.34 (§260.10)

10.1.3.9

*Generator* means any person, by site, whose act or process produces hazardous waste or whose act first causes a hazardous waste to become *subject to regulation* (§260.10). Since manufactured equipment, buildings and structures are “manufactured” and not technically “produced”, their point-of-generation as “hazardous debris” is vaguer than for hazardous waste. For the purposes of this closure plan, equipment, buildings and structures undergoing closure will be generally defined as “first becoming subject to hazardous waste generator regulation” as newly generated waste at that point in time that demolition of that part of the building commences. Intact portions of the building or structure undergoing closure will not be considered newly-generated waste. Equipment that is removed during pre-demolition activities will be subject to hazardous waste generator requirements of 40 CFR 262.32 when the equipment is removed from the building that it was contained in. Once “generated”, the “hazardous debris” becomes subject to all the pre-transport requirements (e.g., packaging, labeling, marking, placarding, accumulation time, etc.) of 40 CFR 262. The basis of characterizing the newly-generated F999 hazardous debris will generally be 40 CFR 262.11(c)(2) (i.e. “generator knowledge” gained from activities conducted pursuant to this closure plan).

10.1.3.10

*Hazardous Debris* means debris that

- 1) contains a hazardous waste listed in subpart D of part 261 [including UAC R315-2-10 (F999) and R315.2-11 (P999)], or
- 2) that exhibits a [characteristic of ignitibility, corrosivity, reactivity or toxicity] (§268.2)

10.1.3.11

*Partial Closure* means the closure of a [single] HWMU in accordance with the applicable closure requirements of 40 CFR 264 and 265 or an approved partial closure plan at a facility that contains other active HWMUs (§260.10)

10.1.3.12

*Treatment* means any method, technique, or process designed to change the chemical or biological character or composition of any hazardous waste so as to

- 1) neutralize such waste, or
- 2) recover energy or material resources from the waste, or
- 3) to render such waste
  - a) non hazardous, or
  - b) less hazardous, or
  - c) safer to transport, or
  - d) safer to store, or
  - e) safer to dispose of, or
  - f) amenable for recovery, or
  - g) amenable for storage, or
  - h) reduced in volume (§260.10)

10.1.4

#### Supporting Documents

In addition to the content provided herein, the following separate documents will be generated and will support closure operations at TOCDF:

- **Closure Verification Sampling and Analysis Plan (CVSAP)** This document provides the required number, type, and location of samples to be collected in support of post-demolition closure verification, the methods and procedures for sample collection, and the analyses to be performed on the

collected samples. With this document will be a Quality Assurance Project Plan (QAPP) that details the quality assurance requirements for the sampling activities and analytical procedures outlined in the CVSAP. The CVSAP and QAPP will be submitted to the Executive Secretary for review. Executive Secretary approval of these documents shall be received prior to commencement of final closure verification sampling. In some cases, the media sample may be collected prior to the demolition phase if it is determined that demolition activities will make the sample more difficult to collect (e.g., collecting soil samples by boring through a concrete slab prior to slab removal). In each case, the soil sample will be collected and managed appropriately to ensure its validity.

- Spill Site Cleanup Plans. Cleanup Plans and the resulting Cleanup Reports are required for each of the TOCDF Related Spill Sites identified in Module VII, Table VII.1. Post-cleanup sampling requirements for these spill sites will be addressed in the CVSAP as required.

10 1 5

Comprehensive List of TOCDF and TOCDF-Operated Facility HWMUs

Table 10-1 lists all HWMUs that are subject to this closure plan

Table 10-1 TOCDF and TOCDF-Operated Facility HWMUs				
40 CFR 264	HWMU Unique Identification	Ancillary Equipment Definition	Location of Primary Element (MDB unless noted)	Vent Cat of Primary Element
Subpart I Container Storage Areas	CHB	10 4 4 5	CHB	D
	UPA	10 4 4 4	UPA	C
	ECV	10 4 4 4	ECV	A/B
	TMA	10 4 4 4	TMA	A
	TMA Airlock	10 4 4 4	TMA Airlock	C
	TMA Decon	10 4 4 4	TMA Decon	A/B
	UPMC	10 4 4 4	UPMC	A
	S-2	10 4 4 5	S-2	D
	Igloo 1632	10 4 4 5	Area 10 Igloo 1632	See Note 2
	Igloo 1633	10 4 4 5	Area 10 Igloo 1633	D
	Igloo 1634	10 4 4 5	Area 10 Igloo 1634	D
	Igloo 1635	10 4 4 5	Area 10 Igloo 1635	D
	Igloo 1636	10 4 4 5	Area 10 Igloo 1636	D
Subpart J Tank Systems  Conventional	ACS-TANK-101	10 4 4 1	Toxic Cubicle	A
	ACS-TANK-102	10 4 4 1		
	SDS-TANK-101	10 4 4 1	SDS Room	A
	SDS-TANK-102	10 4 4 1		
	SDS-TANK-103	10 4 4 1		
	BRA-TANK-101	10 4 4 1	Outdoors	D
	BRA-TANK-102	10 4 4 1		
	BRA-TANK-201	10 4 4 1		
	BRA-TANK-202	10 4 4 1		
	ICS-TANK-8517	Reserved	Igloo 1639	Reserved
	SDS-TANK-8523	Reserved	Igloo 1639	Reserved
	NSF-TANK-8514	Reserved	Igloo 1639	Reserved
	ICS-TANK-8516	Reserved	Igloo 1639	Reserved
	ICS-TANK-8534	Reserved	Igloo 1639	Reserved
Subpart J Tank Systems  ICU Sumps With Secondary Containment	Sump 134	10 4 4 2	111 "A" Airlock	A
	Sump 135	10 4 4 2	TMA "A" Area	A
	Sump 154	10 4 4 2		
	Sump 153	10 4 4 2	TMA "A/B" Area	A/B
	Sump 164	10 4 4 2	Lower Buffer Storage Area	A
	Sump 190	10 4 4 2		
	Sump 179	10 4 4 2	Lower Munitions Corridor	A
	Sump 184	10 4 4 2		
	Sump 125	10 4 4 2	123 "A" Airlock	A
	Sump 106	10 4 4 2	ECR-B	A
	Sump 107	10 4 4 2	ECR-A	A
	Sump 108	10 4 4 2	ECV	B
	Sump 109	10 4 4 2		
	Sump 110	10 4 4 2		
	Sump 112	10 4 4 2	Upper Munitions Corridor	A
	Sump 113	10 4 4 2		
	Sump 114	10 4 4 2		
	Sump 115	10 4 4 2		
		10 4 4 2		

Table 10-1  
TOCDF and TOCDF-Operated Facility HWMUs

40 CFR 264	HWMU Unique Identification	Ancillary Equipment Definition	Location of Primary Element (MDB unless noted)	Vent Cat of Primary Element
	Sump 116	10 4 4 2		
	Sump 117	10 4 4 2		
	Sump 118	10 4 4 2		
	Sump 169	10 4 4 2		
	Sump 174	10 4 4 2		
	Sump 189	10 4 4 2		
	Sump 145	10 4 4 2		
	Sump 146	10 4 4 2	Munitions Processing Bay	A
	Sump 147	10 4 4 2		
	Sump 148	10 4 4 2		
	Sump 149	10 4 4 2		
	Sump 168	10 4 4 2		
	Sump 175	10 4 4 2		
	Sump 124	10 4 4 2	255 A Airlock	B
	Sump 126	10 4 4 2	265 A Airlock	B
Subpart J Tank Systems  ICU Sumps Without Secondary Contaminant	Sump 130	10 4 4 3	Monitoring Room 457	C
	Sump 131	10 4 4 3	Observation Corridor 451	C
	Sump 132	10 4 4 3	DFS "C" Airlock	C
	Sump 133	10 4 4 3	Observation Corridor 454	C
	Sump 144	10 4 4 3	LIC2 Secondary	C
	Sump 150	10 4 4 3	SDS Room	A
	Sump 151	10 4 4 3	Toxic Cubicle	A
	Sump 156	10 4 4 3	LIC1 Secondary	C
	Sump 157	10 4 4 3	LIC2 Primary	A
	Sump 160	10 4 4 3	111 "B" Airlock	B
	Sump 161	10 4 4 3	DFS "B" Airlock	B
	Sump 167	10 4 4 3	Observation Corridor	C
	Sump 180	10 4 4 3	LIC "A/B" Airlock	A/B
	Sump 187	10 4 4 3	MPF "A/B" Airlock	A/B
	Sump 188	10 4 4 3	LIC1 Primary	A
	Sump 193	10 4 4 3	Observation Corridor 359	C
	Sump 197	10 4 4 3	Laboratory	C
	Sump 173	10 4 4 3	Observation Corridor	C
	Sump 182	10 4 4 3	123 "B" Airlock	B
	Sump 101	10 4 4 3	Unpack Area	C
	Sump 102	10 4 4 3		
	Sump 103	10 4 4 3		
	Sump 104	10 4 4 3		
	Sump 136	10 4 4 3	Observation Corridor	C
	Sump 137	10 4 4 3	Observation Corridor	C
	Sump 138	10 4 4 3	Observation Corridor	C
	Sump 139	10 4 4 3	Observation Corridor	C
	Sump 140	10 4 4 3	Observation Corridor	C
	Sump 141	10 4 4 3	Observation Corridor	C
	Sump 142	10 4 4 3	Observation Corridor	C
	Sump 123	10 4 4 3	255 B Airlock	B
	Sump 127	10 4 4 3	265 B Airlock	B
	Sump 192	10 4 4 3	Observation Corridor	C
	BST Sump 103	10 4 4 3	Outdoors	D

Table 10-1 TOCDF and TOCDF-Operated Facility HWMUs				
40 CFR 264	HWMU Unique Identification	Ancillary Equipment Definition	Location of Primary Element (MDB unless noted)	Vent Cat of Primary Element
	BCS Sump 107	10 4 4 3	PUB Bulk Chemical Storage	D
Subpart O Incinerators	LIC 1	10 4 4 6	LIC 1 Primary and Secondary	A
	LIC 2	10 4 4 6	LIC 2 Primary and Secondary	A
	MPF	10 4 4 6	MPF Primary and Secondary	A
	DFS	10 4 4 6	DFS Room and Outdoors	A
	ATLIC <sup>1</sup>	Reserved	Igloo 1639	Reserved
Subpart X Miscellaneous Units	PMD-101	10 4 4 7	ECR-A	A
	PMD-102	10 4 4 7	ECR-B	A
	MDM-101	10 4 4 7	Munitions Processing Bay	A
	MDM-102	10 4 4 7		
	MDM-103	10 4 4 7		
	BDS-101	10 4 4 7		
	BDS 102	10 4 4 7		
	Projo Cutter	10 4 4 7	ECR-A	A
	DVS 101	10 4 4 7	Area 10 Igloo 1632	C
	DVS-102	10 4 4 7		
	DVSSR	10 4 4 7	Area 10 Igloo 1631	See Note 2
	Autoclave	10 4 4 7		
	ATLIC IG Glovebox 1	Reserved	Igloo 1639	Reserved
	ATLIC IG Glovebox 2	Reserved	Igloo 1639	Reserved

Notes

1 These new HWMUs are undergoing public comment for addition to this Permit

2 Although not meeting the technical definition of an MDB ventilation category C area, this HWMU operates under negative pressure engineering controls and will be managed as a ventilation category C area for the purposes of this closure plan

#### 10 1 6 Inspections, Calibrations and Waste Feed Interlock Function Tests

10 1 6 1 Inspections and Automatic Waste Feed Cut-off (AWFCO) testing may be suspended for HWMUs and support systems identified in Attachment 5 of the TOCDF RCRA Permit when an item is removed from service for closure and after all visible hazardous waste has been removed (if present) from the item undergoing closure. The Executive Secretary will be notified when any inspection requirement or AWFCO test listed in Attachment 5 is suspended for closure. In addition, logbooks will no longer be required to be maintained or kept at locations identified in Attachment 5 once the item is removed from service for closure. A notation will be made in the associated inspection form or logbook that the item is undergoing closure when it is removed from service for closure.

10 1 6 2 Calibrations and Waste Feed Interlock Function Tests may be suspended for equipment and systems identified in Attachment 6 of the TOCDF RCRA Permit when an item is removed from service for closure and after all visible hazardous waste has been removed (if present) from the item undergoing closure. The Executive Secretary will be notified when any calibration requirement or Waste Feed Interlock Function Test identified in Attachment 6 is suspended for closure.



10.1.7 Preparedness and Prevention, Contingency Plan

10.1.7.1 Emergency equipment and systems identified in Attachment 8 and Attachment 9 of the TOCDF RCRA Permit may be removed or decommissioned in place as facility closure progresses. Emergency equipment and systems will be maintained by the Permittee during closure until it is determined that the equipment and systems no longer serve their intended purpose. The Executive Secretary will be notified when any emergency equipment or systems are to be removed or decommissioned as the result of facility closure.

10.1.7.2 Periodic changes to Attachment 8 or Attachment 9 of the TOCDF RCRA Permit resulting from closure activities will be identified in quarterly updates that will be submitted to the Executive Secretary as Class 1 permit modification notices to keep the Attachments current with routine changes to facility.

10.1.8 Closure Monitoring

As closure of the TOCDF progresses, agent monitoring requirements will change. A key objective for the closure of the TOCDF is to perform unventilated agent monitoring to demonstrate that the < 1.0 VSL criterion has been met. When this criterion has been satisfied, agent monitoring will be terminated and demolition will commence as described in 10.4.1 of this plan. Temporary changes may be made to the monitoring requirements of Attachment 22 of the TOCDF RCRA Permit by following the normal TOCDF procedures which provide proper approvals and documentation. This will allow for adding to, reducing the number of, or changing the configuration of agent monitors on a temporary basis. The Permittee shall notify the Executive Secretary orally of any reduced monitoring applicable to Attachment 22 prior to implementation.

10.2 CLOSURE PERFORMANCE STANDARD  
140 CFR 264.111, 270.14(b)(13), and UAC R315-8-71

The closure performance standards may be divided into two parts: the *general* standards applicable to all TSDFs, and the *technical* standards for specific types of HWMUs. This Closure Plan defines the processes that will be followed to close the TOCDF and TOCDF-Operated Facilities such that all of the closure performance standards are met.

10.2.1 General Standards

The general performance standards of 40 CFR 264.111 that are applicable to the overall TOCDF facility are as follows:

The owner or operator must close a permitted hazardous waste facility in a manner that

- Minimizes the need for further maintenance, and
- Controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the surface or groundwater or to the atmosphere.

These general standards will be verified at TOCDF by performing site-wide post-closure sampling and analysis described in 10.2.3.

## 10.2.2 Technical Standards

The technical performance standards of 40 CFR 264.111, which constitutes the HWMU-specific standards are as follows:

The owner or operator must close a permitted hazardous waste facility in a manner that

- Complies with the closure requirements of 40 CFR 264, including the requirements of 264.178 (containers), 264.197 (tank systems), 264.351 (incinerators), and 264.601 through 264.603 (miscellaneous units)

### 10.2.2.1 Container Storage Areas - 40 CFR 264.178 (amended by R315-8-9-9)

*'At closure, all hazardous waste and hazardous waste residues must be removed from the containment system. Remaining containers, liners, bases, and soil containing or contaminated with hazardous waste or hazardous waste residues must be decontaminated or removed. At closure, the solid waste removed [shall be presumed and managed as hazardous waste].'*

This technical standard will be met at TOCDF by 1) removing all HW containers and portable secondary containment devices (e.g., secondary containment pallets, ONCs), and 2) decontaminating the fixed secondary containment (i.e., floors and sumps) to the extent necessary for disposal as F999 hazardous debris in a Subtitle C Hazardous Waste Landfill. Secondary containment pallets and ONCs will be decontaminated by triple-rinsing in accordance with RCRA. All hazardous waste or hazardous waste residues removed during decontamination activities will be characterized and managed as newly-generated hazardous waste. The ancillary equipment (e.g., fixed secondary containment in addition to the Subpart CC closed vent and control device) will then be demolished in their entirety and disposed as newly-generated F999 hazardous debris. No ancillary equipment will remain post-closure.

This technical standard will be verified at TOCDF by performing site-wide post-closure sampling and analysis described in 10.2.3 in addition to verification of disposal of the ancillary equipment.

### 10.2.2.2 Tank Systems - 40 CFR 264.197

*'At closure of a tank system, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated soils, and structures and equipment contaminated with waste, and manage them as hazardous waste. If not all contaminated soils can be practically removed or decontaminated, then the owner or operator must perform post-closure care.'*

This technical standard will be met at TOCDF by decontaminating the vessel and ALL ancillary equipment to the extent necessary for disposal as F999 hazardous debris in a Subtitle C Hazardous Waste Landfill. All hazardous waste or hazardous waste residues removed during decontamination activities will be characterized and managed as newly-generated hazardous waste. The vessel and all ancillary equipment will then be demolished in their entirety and disposed as newly-generated F999 hazardous debris. Neither the vessel nor any ancillary equipment will remain post-closure.

This technical standard will be verified at TOCDF by performing site-wide post-closure sampling and analysis described in 10.2.3 in addition to verification of disposal of the vessel and its ancillary equipment. Thus, successful removal of contaminated soils (a requirement for achieving clean-closure) will be verified as well.

10 2 2 3 Incinerators - 40 CFR 264 351 (amended by R315-8-15 8)

*"At closure, the owner or operator shall remove all hazardous waste and hazardous waste residues, including, but not limited to, ash, scrubber waters, and scrubber sludges, from the incinerator site. At closure the residue removed [shall be presumed and managed as hazardous waste]"*

This technical standard will be met at TOCDF by decontaminating the incinerator and ALL ancillary equipment (including the PAS) to the extent necessary for disposal as F999 hazardous debris in a Subtitle C Hazardous Waste Landfill. All hazardous waste or hazardous waste residues removed during decontamination activities will be characterized and managed as newly-generated hazardous waste. The incinerator and all ancillary equipment will then be demolished in their entirety and disposed as newly-generated F999 hazardous debris. Neither the incinerator nor any ancillary equipment will remain post-closure.

This technical standard will be verified at TOCDF by performing site-wide post-closure sampling and analysis described in 10 2 3 in addition to verification of disposal of the incinerator and its ancillary equipment.

10 2 2 4 Miscellaneous Units - 40 CFR 264 601

*"A miscellaneous unit must be closed in a manner that will ensure protection of human health and the environment."*

This technical standard will be met at TOCDF by decontaminating the miscellaneous unit and ALL ancillary equipment to the extent necessary for disposal as F999 hazardous debris in a Subtitle C Hazardous Waste Landfill. All hazardous waste or hazardous waste residues removed during decontamination activities will be characterized and managed as newly-generated hazardous waste. The miscellaneous unit and all ancillary equipment will then be demolished in their entirety and disposed as newly-generated F999 hazardous debris. Neither the miscellaneous unit nor any ancillary equipment will remain post-closure.

This technical standard will be verified at TOCDF by performing site-wide post-closure sampling and analysis described in 10 2 3 in addition to verification of disposal of the miscellaneous unit and its ancillary equipment.

10 2 3 Closure Sampling and Analysis (Closure Verification)

In order to reach the final post-closure configuration of the TOCDF facility, the building that houses the vast majority of the HWMUs (the MDB) will be removed in accordance with the Facility Closure Methodology described in section 10 4 of this Plan. With the exception of those specific buildings or structures that will remain under the non-RCRA use of a future tenant, outlying building superstructures that housed any HWMU ancillary equipment (e.g., the PAS, and the MDB HVAC System), and all portions of concrete, asphalt and soil identified in Module VII as contaminated from spills will be removed.

Once demolition and disposal of demolition debris is complete, the final post-closure configuration of the TOCDF will have been achieved and the soils underlying the removed HWMUs, HWMU ancillary equipment and spill sites will be sampled for hazardous constituents. The buildings that will remain under non-RCRA use by future tenants, which housed permitted HWMUs, but were not themselves ancillary to those units (i.e., did not provide secondary containment) will be verified decontaminated and

returned to custody of DCD Area 10 igloos subject to the DCD RCRA Permit will be subject to the final closure provisions of the DCD Permit, separate from TOCDF closure

10 2 4

#### Final Closure Performance Standard Values

A final closure performance standard value is an analytical value for a chemical of potential concern (COPC) that indicates a level of contamination that is allowed to remain in place at final closure after demolition and disposal is complete. The values, which are protective of human health and the environment, are presented in Table 10-2 which contains closure performance standard values for several COPCs that have been identified for one or more HWMUs at TOCDF, including chemical warfare agents (CWA) and agent degradation products (ADP).

TABLE 10-2 FINAL CLOSURE RISK PERFORMANCE STANDARD VALUES			
	Chemicals of Potential Concern	Airborne Exposure Limits (VSL) (mg/m <sup>3</sup> )	CHPPM HBESLs <sup>1</sup> (mg/kg)
Chemical Warfare Agents (CWA)	GB	1x10 <sup>-4</sup>	32
	HD	3x10 <sup>-3</sup>	0.2 <sup>b</sup>
	VX	1x10 <sup>-5</sup>	1.1 <sup>c</sup>
Agent Degradation Products (ADP)	EA2192	N/A	1.1 <sup>c</sup>

Notes

a The health based screening levels developed by U.S. Army Center for Health Promotion and Preventive Medicine [USACHPPM, 1999 (CHPPM)] that follow the USEPA Region IX risk assessment method is proposed for chemical agent contaminants, to be referred as the Health Based Environmental Screening Level (HBESL).

b The CHPPM HBESL is 0.3 mg/kg for Mustard. The final closure performance standard for Mustard is equivalent to the Field Drinking Water Standard.

c The agent degradation product EA2192 will be considered additive to the HBESL for VX, i.e. the combined value of VX and EA2192 in a collected sample will not exceed 1.1 mg/kg.

Note: Other agent degradation products are not included based on the compounds having no HBESLs developed due to their relatively low toxicity.

10 3

#### MAXIMUM WASTE INVENTORY ESTIMATE

140 CFR 264.112(b)(3), 270.14(b)(13), and UAC R315-8-71

The inventory of hazardous wastes will be managed in accordance with the requirements of the Utah Hazardous Waste Management Regulations (the Rules) for storage facilities and other HWMUs undergoing closure. At the time a HWMU is closed, there will be no residual inventory of hazardous waste present. However, 40 CFR 264.112(b)(3) requires that a closure plan provide an "estimate of the maximum inventory of hazardous wastes ever on-site over the active life of the facility." As such, Tables 10-3, 10-4 and 10-5 provide the maximum permitted-storage capacity of hazardous waste in Subpart J Tanks, Subpart J Intermittent Collection Unit (ICU) Tanks and Subpart I Container Storage Areas at TOCDF. Table 10-5 provides the total aggregate storage capacity at the TOCDF Facility subject to this closure plan (i.e., CAMDS excluded). All volumes are reported in U.S. liquid gallons (231 m<sup>3</sup>).

This maximum inventory estimate is prepared using the conservative strategy of summing the maximum permitted capacity of all units regardless of whether they were ever operated in that manner. This is particularly conservative considering that, unlike the permitted tanks, the sumps are explicitly limited to a storage duration of 24-hours maximum. As a result of this extreme conservatism, the volume of ancillary piping is not considered in the total. In addition, throughout the operating history of TOCDF, newly-generated hazardous wastes were accumulated onsite in multiple container storage areas and tanks. However, the volume of hazardous wastes that temporarily resided in these 90-day areas are not included in this estimate.

TABLE 10-3 SUBPART J PERMITTED STORAGE TANKS		
Tank Description	Location	Capacity (Gallons)
Agent Storage System (ACS) Tanks		1712
ACS-TANK-101	MDB First Floor Toxic Cubicle	582
ACS-TANK-102		1130
Spent Decon System (SDS) Tanks		6600
SDS-TANK-101	MDB First Floor SDS Room	2200
SDS-TANK-102		2200
SDS-TANK-103		2200
Brine Surge Tanks (BSTs)		171,600
BRA-TANK-101	Outdoors, West of Brine Reduction Area (BRA)	42,900
BRA-TANK-102		42,900
BRA-TANK-201		42,900
BRA-TANK-202		42,900
Total Storage Capacity of Subpart J Permitted Conventional Storage Tanks		179,912

TABLE 10-4 SUBPART J PERMITTED ICU TANKS <sup>1</sup> (SUMPS)			
General Location	Specific Location	Sump ID <sup>2</sup>	Capacity (Gallons)
MDB First Floor	Monitoring Room 457	130	89
	Observation Corridor	131	89
	DFS "C" Airlock	132	89
	Observation Corridor	133	89
	111 "A" Airlock	134	89
	TMA "A" Area	135	89
		154	89
	LIC2 Secondary	144	89
	SDS Room	150	85
	Toxic Cubicle	151	512
	TMA "A/B" Area	153	89
	LIC1 Secondary	156	89
	LIC2 Primary	157	89
	111 "B" Airlock	160	89
	DFS "B" Airlock	161	89
	Lower Buffer Storage Area	164	89
		190	89
	Lower Munitions Corridor	179	89
		184	89

TABLE 10-4 SUBPART J PERMITTED ICU TANKS <sup>1</sup> (SUMPS)			
General Location	Specific Location	Sump ID <sup>2</sup>	Capacity (Gallons)
	LIC "A/B" Airlock	180	89
	MPF "A/B" Airlock	187	89
	LIC1 Primary	188	89
	Observation Corridor	193	89
	Laboratory	197	89
MDB First Floor Platform	123 "A" Airlock	125	89
	Observation Corridor	173	89
	123 "B" Airlock	182	89
MDB Second Floor	Unpack Area	101	89
		102	89
		103	89
		104	89
	ECR-B	106	89
	ECR-A	107	59
	ECV	108	89
		109	89
		110	89
	Upper Munitions Corridor	112	89
		113	89
		114	89
		115	89
		116	89
		117	89
		118	89
		169	89
	Munitions Processing Bay	174	89
		189	89
		136	89
		137	89
		138	89
		139	89
		140	89
		141	39
		142	89
	Observation Corridor	145	89
		146	69
		147	69
		148	89
		149	59
	Observation Corridor	168	69
		175	89
	Observation Corridor	167	89
MDB Second Floor Platform	255 B Airlock	123	89
	255 A Airlock	124	89
	265 A Airlock	126	89
	265 B Airlock	127	89
	Observation Corridor	192	89
Total Storage Capacity of Subpart J Permitted ICU Sumps			6173

TABLE 10-4 SUBPART J PERMITTED ICU TANKS <sup>1</sup> (SUMPS)			
General Location	Specific Location	Sump ID <sup>2</sup>	Capacity (Gallons)
Notes 1 ICU sumps are permitted as Subpart J Tank systems because they may be used as <i>primary</i> containment of hazardous waste for a permit-imposed maximum period of 24-hours. Sumps that serve ONLY as <i>secondary</i> containment for nearby tanks or containers are not included in this list. 2 Sumps are identified by their corresponding sump pump number [e.g., sump 130 corresponds to the sump's pump equipment piece number (EPN) SDS-PUMP-130].			

<b>TABLE 10-5 SUBPART I CONTAINER PERMITTED STORAGE AREAS</b>	
<b>Container Storage HWMU</b>	<b>Maximum Inventory (Gallons)</b>
Container Handling Building (CHB)	36,555
S-2 Warehouse	38,720
Area 10 Igloo 1632	14,520
Area 10 Igloo 1633	14,520
Area 10 Igloo 1634	14,520
Area 10 Igloo 1635	14,520
Area 10 Igloo 1636	14,520
Unpack Area (UPA)	3424
Explosive Containment Room Vestibule (ECV)	833
Upper Munitions Corridor (UPMC)	4366
Toxic Maintenance Area (TMA) Container Storage Area	2200
TMA Airlock	381
TMA Decon Area	381
<b>Total Storage Capacity of Subpart I Container Permitted Storage Areas</b>	<b>144,940</b>

<b>TABLE 10-5 Aggregate Total Storage Capacity, All Permitted HW Storage Units</b>	
<b>HW Storage Unit Type</b>	<b>Maximum Inventory</b>
Subpart I Tank Systems	179,912 Gallons
Subpart I ICU Sumps	6,173 Gallons
Subpart I Container Storage Areas	144,940 Gallons
<b>Total Capacity, All Permitted Storage, F999 &amp; P999</b>	<b>331,025 Gallons (44,249 ft<sup>3</sup>)</b>

10.4

#### **FACILITY CLOSURE METHODOLOGY** **[40 CFR 264 112(b)(1) & (2)]**

This section summarizes the processes which will be used to close HWMUs at TOCDF. This section is broken up into four subsections. The first subsection (10.4.1) provides the sequence of events for decontamination and equipment removal. The second subsection (10.4.2) provides the methods to decontaminate the HWMUs. The third subsection (10.4.3) provides the overall closure schedule. The fourth and final subsection (10.4.4) provides a specific definition of what equipment pieces associated with a HWMU are considered "ancillary equipment" and thus constitute a part of the HWMU subject to closure.

Since disassembly of a HWMU pursuant to closure does not constitute modification of the HWMU with the intent to commence storage, treatment, or disposal of hazardous waste within the HWMU, Facility Construction Certifications (FCCs) will not be required. Hence, Permit Condition 1.5 will not apply when modifying the configuration of any HWMU pursuant to closure.

It should be noted that the safety regulations for chemical agents described in Department of the Army Pamphlet 385-61 and all local TOCDF procedures that outline specific methods/codes for dress or operating procedures will be followed during closure.



10.4.1

### Decontamination and Equipment Removal Sequence

The sequence for proceeding through decontamination and equipment removal is a series of steps that will be performed at each area/unit within the TOCDF to ensure they have been decontaminated to a level protective of workers and the environment. The sequence begins with the management, control, and monitoring of hazardous exposures, proceeds through decontamination, and any appropriate equipment and material removal. Information from the Contamination History report was used in developing this sequence.

The sequence of events for each area is as follows:

- 1 ***Establish Engineering Controls/Monitoring*** – For areas normally under ventilation engineering controls (e.g., category A, A/B, B and C), engineering controls will be verified established and functioning before initiating HWMU disassembly activities within a previously agent-contaminated area (liquid or vapor). For TOCDF operations, the controls will address agent vapor management through ventilation control as well as workspace monitoring for agent vapor.
- 2 ***Preliminary Survey*** – After ventilation engineering controls are verified established, workers will enter the designated area to perform a preliminary survey, which will serve to verify existing conditions within the area (e.g., general arrangement of installed equipment, presence of occluded spaces, workspace hazards requiring mitigation before work execution). The steps associated with the performance of an occluded space survey are described in section 10.4.1.1.
- 3 ***Preparation for Work Execution*** – The readiness of the area for intended work is evaluated in this step. Energized systems in the work area that could affect the safety of the workers will be isolated and the integrity of secondary containment systems and spent decontamination solution (SDS) collection systems will be verified before gross decontamination activities are undertaken. Supporting utilities such as fire suppression system water, plant and process water will be isolated to areas as needed. The impact of these system isolations will be evaluated in order to maintain the safety of personnel and the facility.
- 4 ***Decontamination and Equipment Disposition*** – The approach to work in each area will differ depending upon existing conditions, installed equipment, and contamination history. The decision to decontaminate, and to what degree, will be evaluated throughout the closure process. Agent-contaminated equipment, buildings and structures will be decontaminated and monitored such that engineering controls for ventilation or air pollutant emissions control (i.e., Subpart CC boundaries) are no longer required to ensure worker exposure/release levels do not exceed 1.0 WPL. Work activities in a selected area will include the following as appropriate and generated waste will be managed in accordance with 10.5, Closure Waste Management:
  - a Elimination of fluids
  - b Removal of components and equipment deemed too complex for thorough disassembly and revealing of occluded spaces

- c Exposure (revealing) of occluded spaces
  - d Surface decontamination for chemical agent and other hazardous waste constituents
  - e *In situ* thermal decontamination of specific components and structures in accordance with a specific formal *in situ* thermal destruction plan prepared in accordance with site procedures
  - f Removal of components and equipment that pose a personnel tripping hazard or area congestion hazard
  - g Removal of floor coatings for underlying concrete sampling as described in section 10.4.1.2
  - h Identification and evaluation of embedded drain lines
  - i Removal of sump protective liners
  - j Removal of universal wastes
- 5 **Post Disposition Survey** – At the conclusion of decontamination and equipment removal activities in each work area, a post-work survey will be performed to verify that work objectives have been achieved. This survey will confirm the following conditions to verify that a safe configuration has been achieved:
- a Occluded spaces (as described in 10.4.1.1) that have not otherwise been adequately treated (e.g., thermally) have been exposed or eliminated,
  - b Explosives and PCBs have been removed to levels below industrial clean-up standards, and
  - c Non-agent waste materials (e.g., lead based paint, asbestos, mercury, universal wastes) have been removed, or if left in place, have been identified for proper disposal during demolition.
- 6 **Perform Final Ventilated Monitoring Test** – Areas normally under ventilation engineering controls will be subject to a final Ventilated Monitoring Test (VMT). The VMT requires 24 continuous hours of NRT monitoring with the forced ventilation system running. If any results are  $\geq 1.0$  VSL, evaluation of areas will be performed with point-source ACAMS to identify hot spots. Contaminated areas will be decontaminated and the procedure will be repeated until results are  $< 1.0$  VSL. Achieving satisfactory ventilated monitoring results provides assurance that decontamination and equipment removal activities have been completed, and if the area is subject to an unventilated monitoring test, then that test is ready to proceed. The VMT does not apply to ventilation category areas D and E and outdoors.
- 7 **Perform Final Unventilated Monitoring Test (UMT)** – Areas normally under ventilation engineering controls and which have thus been determined via risk assessment, will be a final Unventilated Monitoring Test (UMT). Final verification (prior to demolition) includes the performance of an UMT for areas identified via risk assessment, the goal of which is to measure an agent off-gas rate. This off-gas rate will be determined by holding the unventilated area test volume for a pre-determined period of time to allow for agent, if present on building and equipment surfaces, to off-gas into the test volume airspace. After the test volume's hold time has expired, the agent concentration in the test volume airspace will be measured via air monitoring using 1.0 VSL as a test-specific criterion. UMT success criteria will be the determination of an agent off-gas rate for an area such that workers will not be exposed to a work

environment at or above 10 WPL post-UMT (e.g., during demolition). If the measured off-gas rate does not meet this criterion, evaluation of areas will be performed with point-source ACAMS to identify hot spots. Contaminated surfaces will be further decontaminated and the UMT process will be repeated until the UMT success criterion is met.

In areas subject to the UMT, a successful UMT in addition to the performance of activities described in 10.4.1 steps 1 through 7 constitute evidence of

- 1) successful decontamination of building, equipment and structures such that the buildings, equipment and structures can be safely demolished, transported and disposed at a Subtitle C Hazardous Waste facility as F999 Hazardous Debris or Hazardous Waste, and
- 2) the non-applicability of the P999 hazardous waste code to the demolition debris via the contained-in policy.

8 **Final Isolation** – For areas subject to the UMT, upon successful completion of the final UMT, monitoring will be removed. For areas subject to the VMT only, upon successful completion of the VMT, monitoring will be removed. Access to the buildings/areas will be restricted until such time that demolition of the building begins.

9 **Demolition** – After the MDB and all other buildings housing HWMUs are decontaminated and verified to meet the minimum “action level criteria for disposal” (< 10 VSL generated off-gas rates determined through a successful UMT or completed decontamination for areas not subject to the UMT), the buildings and then contents will be demolished, with the exception of those specifically requested by DCD to remain for future non-RCRA use. Demolition will include the removal of the MDB concrete slabs and the removal of any ancillary underground piping. With the exception of those specifically requested by DCD to remain for future non-RCRA use, buildings and structures not associated with HWMUs will be removed to the floor slab, which will remain. At the conclusion of the demolition step

- a. All HWMUs will have been removed from the TOCDF site including the DCD Area 10 treatment units,
- b. With the exception of buildings that will remain under non-RCRA use by future tenants, all buildings that housed HWMUs, will have been removed from the TOCDF site, including the MDB floor slabs,
- c. Buildings that will remain under non-RCRA use by future tenants by specific request that housed HWMUs and their ancillary equipment will have been decontaminated of TOCDF-related operations potential contaminants,
- d. Module VII Spill Sites will have had all contaminants removed, including contaminated soil and pavement,
- e. With the exception of specific non-HWMU buildings and their support utilities buildings and structures (e.g., sewage treatment, security, and electrical/water structures) that will remain in non-RCRA use by other tenants, all buildings will have been removed down to the grade slabs, which will remain in-place,

- f Paved roads, parking lots and other concrete surfaces will remain in place for use by other tenants

- 10 **Conduct Final Closure Verification Sampling** – A combination of random and judgmental samples will be collected for the purpose of closure verification. As stated in Section 10.1.4, a separate Closure Verification Sampling and Analysis Plan (CVSAP) and Quality Assurance Program Plan (QAPP) will be submitted to the Executive Secretary for approval.

#### 10.4.1.1

#### Occluded Space Survey

An Occluded Space is defined as a confined or restricted access volume within a system, structure, or component that was exposed, or potentially exposed, to liquid agent and has the potential to contain any quantity of agent or agent-exposed or contaminated liquid. The location and position of such spaces may prevent or limit contact with decontamination solutions.

Prior to performing air monitoring per 10.4.1, all potential sources of residual liquid agent (occluded spaces) must be identified and decontaminated. Revealing (exposing) the occluded space to enable effective penetration of decontamination solution is the primary method of ensuring agent decontamination of an occluded space. In lieu of chemical decontamination, thermal decontamination may be used in certain circumstances provided the rigors of the in situ thermal destruction technology are met as described in 10.4.2.2.9.

General examples of a potential occluded space include:

- Floor anchor bolts, or anchor bolt holes, in an agent operation area, whether or not there was a known agent spill in the area
- Anchor bolts, or anchor bolt holes in walls for which there was known liquid agent contact with the wall
- An agent pipe that has been blinded, capped or otherwise sealed, irrespective of whether or not it has been previously decontaminated
- Flat, parallel surfaces in close proximity to each other that limit effective penetration of decontamination fluids
- Pipe and tank supports
- Areas sealed with any type of caulking, grout or rubber seals and gaskets
- The space under a floor mat, support plate, or other movable object which covers a potentially contaminated surface
- Equipment which harbors space inaccessible to decontamination solutions

Examples are:

- Internal check valves or complex geometry valves with the potential to trap liquid agent behind double seal o-rings, within packing, etc.
- Shaft seals, bearings, etc.
- Internal blind or occluded cavities of pumps
- Tools, closed tool boxes, etc.

Following decontamination/decommissioning activities but before unventilated monitoring begins, a final survey will be performed to validate that all occluded spaces have been addressed and also to ensure that no other occluded spaces have been missed in the assessment and work process.

10.4.1.2

Liquid Agent-Exposed Floors

In areas where coated concrete floors have been exposed to liquid agent, the approach will be to perform statistical chip sampling in combination with judgmental samples (i.e. locations where stains/suspect areas based on observations, process knowledge and professional judgment). Agent-contamination within the underlying concrete indicates failure of the floor coating to perform as an impermeable barrier. In order to access the underlying concrete, the floor coating will be removed in these areas where samples are to be collected. If the concrete chip sample indicates agent contamination above the waste control limit (WCL), 20 ppb for GA/GB/VX and 200 ppb for Mustard/Lewisite, further sampling will be performed to assess the lateral extent of concrete contamination. Once the extent of concrete contamination has been determined, the agent-contaminated concrete within the defined area will be decontaminated by application of one of the following technologies:

1) Physical Extraction to meet the applicable performance standard (e.g., removal of at least 0.6 centimeters of the surface layer and achievement of a clean debris surface). The removed contaminated layer material will be removed, treated and disposed as hazardous waste in accordance with the Waste Analysis Plan or the generator requirements of 40 CFR 262.11. Successfully decontaminated concrete (uncontaminated underlying concrete) sampling below the WCL will be performed to verify concrete decontamination.

2) Thermal Destruction in accordance with a formal *ad hoc in situ* thermal destruction plan prepared in accordance with site procedures. Successfully decontaminated concrete sampling below the WCL will be performed to verify concrete decontamination.

10.4.1.3

Early Partial Closure -- Individual HWMUs

This section pertains to the partial closure of an individual HWMU or any part thereof that is performed anytime after the HWMU has fulfilled its purpose, but prior to TOCDF entering the site-wide demolition phase.

TOCDF may, when the opportunity arises, perform partial closure of individual HWMUs, wholly or in-part, provided that the individual HWMU and/or its ancillary equipment can be 1) disassembled, decontaminated, treated and disposed in a manner that is consistent with the Waste Analysis Plan (WAP) or the generator requirements of 40 CFR 262.11 or, 2) thermally-decontaminated in accordance with a formal *ad hoc in situ* thermal destruction plan prepared in accordance with site procedures.

Because early partial closure directly impacts the planned sequence and duration of closure activities as described in this Closure Plan, the Permittee shall notify the Executive Secretary of the intent to perform, either whole or in-part, early partial closure prior to commencement of disassembly.

HWMU components undergoing early partial closure can be decontaminated, treated and disposed in a Subtitle C HW landfill within the scope of an existing specified waste stream appearing in the WAP (e.g., thermally treated as waste stream 2.2.1.6 "non-combustible bulk solid waste" or decontaminated and disposed as waste stream 2.2.2.30 "closure generated waste"). HWMU components thermally decontaminated pursuant to early partial closure in accordance with a formal *in situ* thermal destruction plan shall be

1) left in-place for removal during demolition, or 2) removed, declared F999 hazardous debris, and disposed in a Subtitle C hazardous waste landfill

Because closure of the HWMU must ultimately be certified by an independent registered professional engineer at the conclusion of final closure activities, all records pertaining to the disassembly, decontamination, treatment and disposal of the HWMU, including each piece of ancillary equipment, shall be retained for future retrieval

Metal components may be recycled by reclamation in lieu of being disposed in a landfill as hazardous debris/waste provided the requirements of 10 5 4 5 are met

10 4 2

#### Equipment and Facilities Decontamination

The decision to decontaminate, and to what degree, will be evaluated throughout the closure process. Agent-contaminated equipment, areas, and facilities will be decontaminated and headspace-monitored to < 10 VSL such that engineering controls for ventilation or secondary containment (i.e., protective containment boundaries) are no longer required.

Within each of the buildings/structures, selected rooms and equipment will require decontamination to reduce residual agent levels prior to disassembly and removal in accordance with the closure sequence (Section 10 5 1). The decontamination methods will be compatible with the individual systems and will not cause imminent failure or breach of the system's primary containment.

Decontamination of non agent-contaminated areas addresses hazardous waste and hazardous material residue other than agent. For areas/systems that are also contaminated with agent, the non-hazardous waste/material may be completely or partially removed with the same decontamination technique(s) used for agent.

Many support buildings at TOCDF were never used for or exposed to chemical agents, hazardous materials, or hazardous wastes. These areas include the CON, modular office "T" buildings, some stationary "S" buildings, the Entry Control Facility, etc. Gross decontamination of these facilities will be limited to collection and removal of loose debris, as necessary. No further decontamination is anticipated prior to bulk demolition.

Non-agent contamination existing outside facility buildings is assumed to be minimal and to require limited decontamination effort, if any. Decontamination of non agent-contaminated areas will be conducted to support removal of the protective containment boundaries and allow demolition of the equipment and structures, and to support the various disposal options for the generated waste streams. Additionally, coatings, insulation, and building materials will be evaluated for presence of lead-based paint, asbestos-containing material, and other regulated materials. Stripping and segregation of these regulated materials, if necessary to ensure proper debris disposal, will take place prior to building demolition. Regulated materials and associated demolition debris will be shipped offsite for disposal in accordance with applicable regulations.

10 4 2 1

#### General Decontamination Approach

Even though equipment, buildings and structures will not technically have been declared as hazardous debris at the time of decontamination (not formal "treatment"), they will

ultimately be declared hazardous debris upon demolition, characterized based on generator knowledge, and disposed as hazardous debris. Therefore, decontamination of equipment, buildings and structures will be conservatively based on methods listed in 40 CFR 268.45, Table 1 Alternative Treatment Standards for Hazardous Debris.

Decontamination will proceed in a specific sequence/order, based on conditions at each area, to allow the most effective, easiest and safest decontamination and/or disassembly. Equipment and material may be disassembled and themially decontaminated in the MPF or Autoclave permitted units in accordance with the WAP. Alternatively, surfaces that have been in contact with liquid agent may first be decontaminated using mechanical means, such as wiping the surface to remove particulates, grease, and other surface debris, or by scarifying to remove surface coatings that may have been contaminated with agent. Following mechanical decontamination, equipment and surfaces may be chemically decontaminated with a neutralization solution or may be size reduced, packaged as appropriate, and sent to permitted storage awaiting further treatment. If chemical decontamination occurs, decontamination solution will be used in such a manner as to prevent the spread of contamination. Newly generated residual decontamination solution will be managed in accordance with WAP.

After chemical decontamination is complete, decontaminated surfaces will be air dried and equipment and areas will be tented and air monitored to determine if the "unventilated monitoring criterion" of  $<1.0$  VSL for chemical agent has been achieved. Equipment that meets the agent screening criterion of  $<1.0$  VSI may be packaged appropriately and shipped offsite in accordance with its planned disposition or may be left in place for future removal during site-wide demolition. Equipment and areas failing the action level criterion for disposal of  $\geq 1.0$  VSL will be evaluated to determine whether additional chemical, mechanical or in situ thermal decontamination is viable to achieve the criterion, or whether formal HWM treatment via an active HWMU is necessary.

#### 10.4.2.2

##### Decontamination Techniques

This section describes the various methods that will be employed for decontamination. The methods may be employed, either singularly or in combination, to decontaminate the equipment, building or structure. Any wastes newly-generated from decontamination activities (e.g., rinsate, DPE, etc.) will be managed in accordance with the Waste Analysis Plan (WAP).

#### 10.4.2.2.1

##### Water/Steam Flushing

Water and/or steam flushing has both chemical and mechanical decontamination properties. This technique involves flooding a surface with water (typically hot) or steam. The water or steam removes the contaminants and the resulting wastewater is collected for treatment or disposal. This technique may be used with detergents or other chemicals that enhance the effectiveness of the technique. The flushing action may also erode and remove loose debris from the exposed surface area. Steam cleaning may be used to physically extract contamination from building and equipment surfaces. This technique combines the solvent action of water with the kinetic energy effect of blasting and elevated temperature. Effectiveness of steam cleaning as a decontamination method for agent is further increased by localized hydrolysis of the residual agent. The steam may be applied using hand-held wands or automated systems, and the condensate is collected in room sumps for treatment and/or disposal.

#### 10.4.2.2.2 Chemical Decontamination Solutions

Sodium hydroxide (NaOH, caustic) and bleach solution (calcium hypochlorite, sodium hypochlorite) are recognized as effective decontamination solutions for the chemical destruction of agent contamination. The chemical decontamination technique involves the application of caustic, bleach, or other similar solutions to the contaminated surface. The surface may be scrubbed with the solutions and/or allowed to stand for a period of time, and then flushed thoroughly with water. These solutions may also be used in combination with detergents and surfactants.

#### 10.4.2.2.3 Detergents and Surfactants

Most commercial detergents are formulations of a detergent (sodium laurel sulfate, sodium oleate, alkyl aryl sulphonate) that also acts as a wetting agent or surfactant, a phosphorous or carbonate salt ( $\text{Na}_3\text{PO}_4$ ,  $\text{Na}_2\text{CO}_3$ ), a thickening agent (carboxyl methyl cellulose), and other fillers. Unlike the decontamination solutions described above that effectively destroy the agent contamination, detergents are used in decontamination to physically remove surface contaminants (e.g., agent) and capture them in the resulting spent solution. Surfactants work by lowering liquid surface tension and providing better contact between the surface and the liquid. Detergents are effective, mild, all-purpose cleaners for all facility surfaces and equipment. They can be used to increase the effect of water, steam, and solvents, and then effectiveness is increased by mechanical agitation. Detergents may not be effective on metal corrosion and long standing contamination. A commercial all purpose cleaner/surfactant (Whistle®) has been used successfully to decontaminate items during TOCDF plant operations.

#### 10.4.2.2.4 Foam Decontamination

Foam, such as that produced by detergents and wetting agents, can be used as a carrier mechanism for chemical decontamination agents. They can be applied in different depths and surface orientations. The foam decontamination method can effectively decontaminate metallic walls and parts of complex components. Surfactants in the foaming agent can enhance the effect by increasing contact with the surface. The primary mode of action of the decontaminant is based on oxidizing properties of hydrogen peroxide. A surfactant and an accelerant increase the rate of peroxide activity and allow the decontaminant to be applied as stable foam.

#### 10.4.2.2.5 Physical / Mechanical Scrubbing

Physical/mechanical scrubbing with brushes or other devices was found to be extremely beneficial and most likely necessary, in the decontamination of other demilitarization sites. Combining scrubbing of surfaces with the appropriate decontamination solution increases the efficiency of the decontamination solution in removing and destroying residual agent by enhancing contact between the solution and the agents.

#### 10.4.2.2.6 CO<sub>2</sub> Blasting

CO<sub>2</sub> blasting (also known as dry ice blasting) is a decontamination technique used to physically remove contaminated surfaces. The method utilizes compressed air to accelerate frozen carbon dioxide (CO<sub>2</sub>) pellets, at supersonic speeds, towards a surface.



The impact of the CO<sub>2</sub> pellets creates mini-explosions on the surface and results in the lifting/removal of the topmost layer of a substrate. CO<sub>2</sub> blasting is a non-abrasive, nonflammable and nonconductive cleaning method which is environmentally-friendly and contains no secondary contaminants such as solvents or grit media. The method allows most items to be cleaned in place and can be used without damaging active electrical or mechanical parts or creating fire hazards. Additionally, CO<sub>2</sub> blasting can be used to remove production residues, release agents, contaminants, paints, oils and biofilms from surfaces.

10.4.2.2.7 Mechanical Surface Removal

Mechanical surface removal, such as grinding, scraping, or scarifying, is a decontamination option to physically remove contaminated surfaces. These techniques may be used to decontaminate areas intended for reuse or to achieve a prerequisite condition to support removal of protective containment boundaries. Surface removal may also be used to reduce the volume of hazardous waste by removing only the contaminated fraction and allowing disposal of the uncontaminated substrate as non-hazardous waste or leaving the uncontaminated substrate in place. Grinding with grinding wheels or surfacing discs removes thin layers of surface contamination from concrete where contamination is limited to the coating or sealant finish. Scarifiers physically abrade both coated and uncoated concrete and steel surfaces. The scarification process removes the top layers of contaminated surfaces down to the depth of sound, uncontaminated surfaces. Scabbling is a scarification process used to remove concrete surfaces. Needle scaling is a scarification process for both concrete and steel surface removal. The removed surface material is then collected by vacuum system for treatment and/or disposal.

10.4.2.2.8 Surface Coating (Encapsulation)

Coatings may be used on contaminated surfaces to fix or stabilize the contamination in place. The intent is to decrease or eliminate the exposure hazard, and reduce the potential spread of contamination. Although no removal of contamination occurs, the stabilized contaminants can be left in place and removed with the substrate for further treatment or disposal. This may be used to achieve a condition that allows removal of the protective containment boundaries if the substrate can be safely removed later without those boundaries in place.

10.4.2.2.9 In-Situ Thermal Destruction

Chemical warfare agents GB, VX and Mustard are susceptible to molecular destruction at elevated temperatures. At TOCDF, thermal destruction in subpart O incinerators is the prescribed method for permitted-treatment of liquid chemical agents, as described in Module V and VI of this permit. The residence time necessary to destroy agent at the elevated temperature is generally an inverse function of the temperature. Hence, the 1000+ °F temperatures in the incinerators results in a very rapid destruction of agent (e.g., seconds). In contrast, lower temperatures used during *in situ* thermal destruction results in a relatively long residence time (e.g., minutes or hours).

Although more complex to perform than surface decontamination, the *in situ* thermal destruction of chemical agent contaminants on equipment greatly reduces the need to disassemble complex equipment in order to reveal agent-harboring crevices. This is due

to the ability of heat to effectively penetrate by conduction into crevices and drive the local temperature up

Based on the "Alternative Treatment Standard for Hazardous Debris" B 3, *in situ* thermal destruction, when utilized for hazardous debris, is subject to verification of localized temperature and residence time. Only with verified localized temperature and verified residence time can *in situ* thermal destruction be reliably effective. Hence, the use of this technology as a means to decontaminate potentially agent-bearing crevices, occluded spaces, complex equipment or concrete requires

1) the performance of a "feasibility study" as defined in 40 CFR 260.10 wherein optimal process conditions or minimum effective process conditions (i.e., minimum residence time as a function of local temperature, or minimum local temperature as a function of residence time) are determined in order to achieve the desired agent destruction effectiveness, and

2) a rigorous situational-specific engineering application combined with objective data collection *during actual thermal treatment* (e.g., conservative thermocouple placement, conservative thermal dosimeter, or the use of spiked samples) in order to verify that the optimal or minimum effective process conditions were met or exceeded

10.4.2.2.10

#### Natural Attenuation/Volatilization

Analogous to the "Alternative Treatment Standard for Hazardous Debris" A 3 b "Thermal Desorption", Natural Attenuation represents the extraction of volatile hazardous contaminants (e.g., agent) from the debris surfaces and subsequent capture of the contaminants from the exhaust gas (e.g., the carbon adsorption HVAC filtration system). Natural Attenuation occurs at ambient temperatures within the normal HVAC airflow. Natural attenuation is the result of mass transfer by evaporation of agent from debris surfaces to the surrounding air, and is not necessarily effective for materials such as bare concrete, wood or materials possessing occluded spaces. Hence, natural attenuation as a means of decontamination will only be effective for non-porous metallic or painted surfaces and only upon verification by headspace monitoring to <1.0 VSL.

10.4.3

#### Schedule for Closure, Time Allowed for Closure, and Extension of Closure [40 CFR 270.14(b)(13), 264.112(b)(6), 264.112(b)(2), 264.113(a) and (b)]

The anticipated TOCDF facility closure schedule is presented in Figure 10-1. Decommissioning within the MDB, which houses the vast majority of HWMUs, will proceed in an area-by-area manner based primarily on ventilation category. Hence, a *specific* sequence of HWMU decommissioning is not provided since a given HWMU's ancillary equipment is oftentimes spread throughout multiple areas of the MDB. However, the *general* decommissioning sequence of the HWMUs' primary elements is provided in Figure 10-2.

The closure of TOCDF will occur in four distinct phases

#### *Phase 0, Pre Closure Planning and Early Opportunity Work*

This phase occurs prior to the completion of munitions processing and official commencement of closure operations. Along with administrative planning and preparations, other activities to take advantage of time and resource availability and to prepare the plant for closure after the end of munitions processing will be

planned and executed Early Partial Closure, in accordance with conditions described in 10.4.1.3, will occur during this phase

Phase 1, *Decommissioning and Decontamination*

During this phase, equipment, buildings and structures are decontaminated, dismantled, verified decontaminated and characterized as necessary to prepare the facility for demolition and disposal, or turnover to other tenants as determined in the end state document. For agent contaminated facilities, this includes successfully completing Unventilated Manometric Testing (UMT) and final isolation of utilities and systems for demolition. The objective of the D&D phase is to decontaminate the facility to a level that is protective of the demolition crew, the HW transporter, the disposal facility workers and the environment, and meets the regulatory requirements for disposal.

Phase 2, *Demolition and Facilities Disposition*

During this phase a demolition subcontractor will demolish, package, offer for transport and offer for disposal of equipment, buildings and structures in order to achieve the physical end-state of the facility in accordance with regulatory plans and permits.

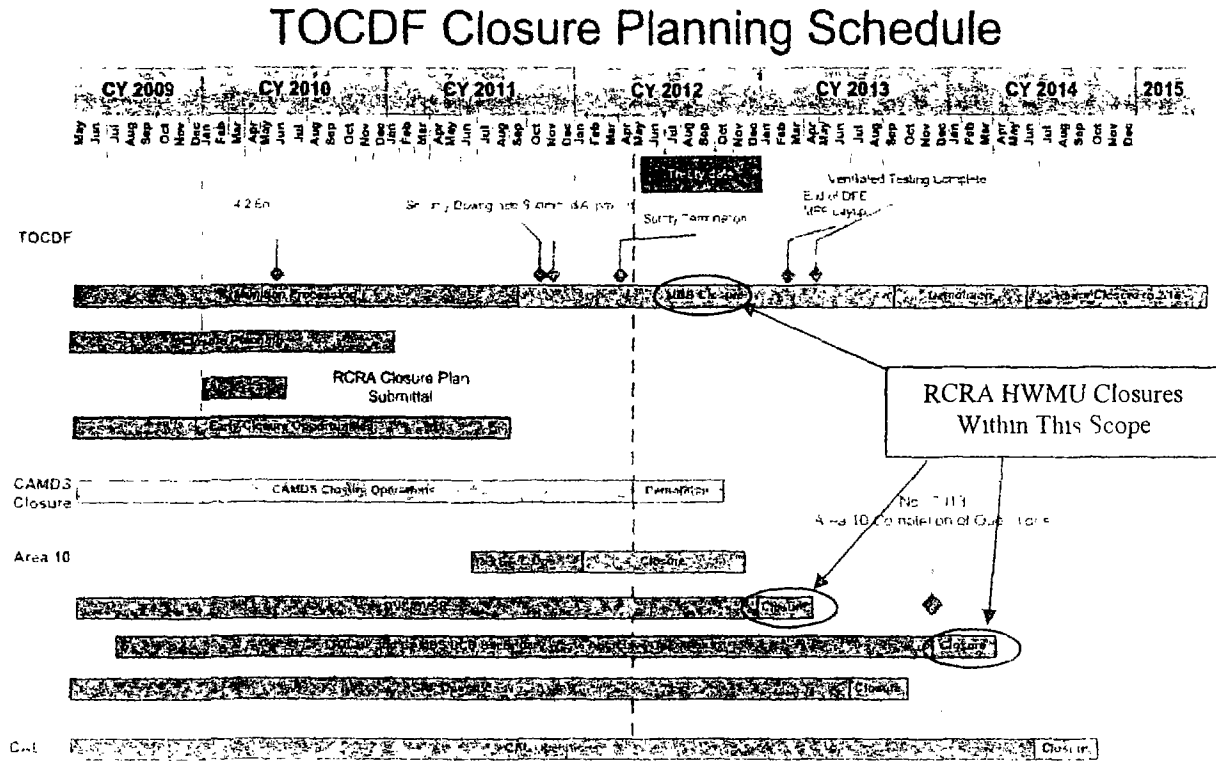
Phase 3, *Administrative Closeout*

During this phase, the RCRA clean-closed end-state of the facility will be verified through implementation of the CVSAP. In addition, completion of facility closure will be certified by an independent registered Professional Engineer. Accordingly, the TOCDF RCRA TSDF Permit will be terminated.

Various non-RCRA business-related activities during this phase include:

- Final disposition of both Real and Personal Property
- Purchase Order and Subcontract Closeout and all claims settled
- All records are in an Army-compliant format and delivered to their final destination
- Final close out of Prime Contract

Figure 10-1 TOCDF Closure Planning Schedule



5/29/10

Figure 10-2 General Sequence of HWMU Decommissioning

General Area	HWMUs				
	Container Storage	Tank	Sump	Incinerator	Miscellaneous Unit
<b><i>MDB and Vicinity, September 2011 – September 2013</i></b>					
1	DFS Primary Room		132, 161	DFS	
2	ECR A		107		PMD-101, Projo Cutter
3	ECR B		106		PMD-102
4	Munitions Processing Bay		145, 146, 147, 148, 149, 168, 175		MDM-101, MDM-102, MDM-103, BDS-101, BDS-102
5	Toxic Cubicle	ACS-TANK-101, ACS-TANK-102	151		
6	Lower Buffer Storage		164, 190		
7	LIC 1		156, 180, 188	LIC 1	
8	LIC 2		144, 157	LIC 2	
9	Explosive Containment Vestibule	ECV	108, 109, 110		
10	Upper Munitions Corridor	UPMC	112, 113, 114, 115, 116, 117, 118, 169, 174, 189		
11	Lower Munitions Corridor		179, 184		
12	255 Airlocks		123, 124		
13	265 Airlocks		126, 127		
14	Toxic Maintenance Area		135, 154		
15	Toxic Maintenance Area Airlock	TMA Airlock, Decon	153		
16	123 Airlocks		125, 182		
17	111 Airlocks		134, 160		
18	Spent Decon System Room	SDS-TANK-101, SDS-TANK-102, SDS-TANK-103,	150		
19	Metal Parts Furnace		187	MPF	
20	Pollution Abatement System Building	Major Ancillary Equipment of MPF, LIC 1, LIC 2, and DFS Incinerators			
21	Unpack Area		101, 102, 103, 104		
22	Category C Observation Corridors, Laboratory, and Monitoring Room		167, 131, 133, 193, 173, 192, 136, 137, 138, 139, 140, 141, 142, 130, 197		
23	HVAC Structure	Major Ancillary Equipment (Subpart CC) of ACS-101, ACS-102 and Cat A Sumps			
24	Container Handling Building	CHB			
25	S-2 Warehouse	S-2			
26	Bonne Surge Tank Farm	BRA-TANK-101, BRA-TANK-102, BRA-TANK-201, BRA-TANK-202			

General Area	HWMUs				
	Container Storage	Tank	Sump	Incinerator	Miscellaneous Unit
<b>Area 10 DVS/DVSSR, December 2012 – April 2013</b>					
1	Igloo 1632				DVS-101, DVS-102, DVSSR
<b>Area 10 Autoclave, November 2013 – April 2014</b>					
1	Igloo 1633				Autoclave

#### 10 4 4 Scope of Ancillary Equipment

This section describes the minimum extent of what is considered “ancillary equipment” for the purposes of this closure plan. Hence, a HWMU will be defined as the primary HWMU element (e.g., wetted tank vessel, incinerator combustion chambers) in addition to all of its ancillary equipment.

#### 10 4 4 1 Conventional Tank Systems

<b>Table 10-7</b> <b>Equipment Constituting Subpart J Tank Systems (Brine Surge Tanks, ACS Tanks, SDS Tanks)</b>		
Portion	Sub-Portion	Boundaries/Extent
Primary Containment	Vessel	Entire vessel including nozzles, lids, manhole covers, vent pipe, conservation vent
Secondary Containment	Floor and walls/berms/dikes	Entire floor and wall/berm within the credited required secondary containment volume calculation
	Sump system (BSTs Only)	Entire sump internal surface All piping, fittings, flanges, valves, filters and pumps from pump suction to vessel connection
Hazardous Waste Conveyance	Supply (Inflow)	All piping, fittings, flanges, valves, filters and pumps from vessel connection to boundary with continuous downstream HWMU
	Discharge (Outflow)	All piping, fittings, flanges, valves, filters and pumps from vessel connection to boundary with continuous downstream HWMU or unload station
	Recirculation	All piping, fittings, flanges, valves, filters and pumps from vessel discharge connection to vessel input connection
Subpart CC Air Pollutant Emissions System (ACS Tanks Only)	Closed vent	MDB HVAC ducting from MDB exit to connection to each of nine carbon adsorption filter housings
	Emissions control device	HVAC carbon adsorption filter housings from incoming ducting connections to discharge ducting connections

#### 10 4 4 2 Sump Systems With Secondary Containment

<b>Table 10-8</b> <b>Equipment Constituting Subpart J ICU Tank Systems Possessing a Steel Liner</b>		
Portion	Sub-Portion	Boundaries/Extent
Primary Containment	Sump liner	Entire steel liner

Secondary Containment	Concrete vault	Entire concrete vault internal surface
Hazardous Waste Conveyance	Supply (Inflow)	Floor surfaces that channel liquid toward the primary containment
	Discharge (Outflow)	All piping, fittings, flanges, valves, filters and pumps <i>from</i> sump pump suction <i>to</i> boundary with continuous downstream HWMU (e.g., SDS Tank System)
Subpart CC Air Pollutant Emissions System (P999 Sumps Only)	Closed vent	MDB HVAC ducting <i>from</i> MDB exit to connection <i>to</i> each of nine carbon adsorption filter housings
	Emissions control device	HVAC carbon adsorption filter housings from incoming ducting connections to discharge ducting connections

10.4.4.3 Sump Systems Without Secondary Containment

<b>Table 10-9</b> <b>Equipment Constituting Subpart J ICU Tank Systems with No Liner</b>		
Portion	Sub-Portion	Boundaries/Extent
Primary Containment	Concrete vault	Entire concrete vault internal surface
Hazardous Waste Conveyance	Discharge (Outflow)	All piping, fittings, flanges, valves, filters and pumps <i>from</i> sump pump suction <i>to</i> boundary with continuous downstream HWMU (e.g., SDS Tank System)
Subpart CC Air Pollutant Emissions System (P999 Sumps Only)	Closed vent	MDB HVAC ducting <i>from</i> MDB exit to connection <i>to</i> each of nine carbon adsorption filter housings
	Emissions control device	HVAC carbon adsorption filter housings from incoming ducting connections to discharge ducting connections

10.4.4.4 Container Storage Areas with Fixed Secondary Containment

<b>Table 10-10</b> <b>Equipment Constituting Subpart I Container Storage Areas</b>		
Portion	Sub-Portion	Boundaries/Extent
Primary Containment	Containers	All containers will have been removed from the storage unit prior to closure
Secondary Containment	Floor and walls/berms/dikes	Entire floor and wall/berm within the credited required secondary containment volume calculation
Subpart CC Air Pollutant Emissions System	Closed vent	MDB HVAC ducting <i>from</i> MDB exit to connection <i>to</i> each of nine carbon adsorption filter housings
	Emissions control device	HVAC carbon adsorption filter housings from incoming ducting connections to discharge ducting connections

10 4 4 5 Container Storage Areas Without Fixed Secondary Containment

<b>Table 10-11</b> <b>Equipment Constituting Subpart I Container Storage Areas without Fixed Secondary Containment)</b>		
Portion	Sub-Portion	Boundaries/Extent
Primary Containment	Containers	All containers will have been removed from the storage unit prior to closure
Secondary Containment	Containment Pallets/Devices	All secondary containment pallets and devices (e.g., ONCs) will have been removed from the storage unit prior to closure

10 4 4 6 Incinerator Systems

<b>Table 10-12</b> <b>Equipment Constituting Subpart O Incinerator</b>		
Portion	Sub-Portion	Boundaries/Extent
Combustion Chambers	Primary Chamber	<i>(LICs Only)</i> Entire primary chamber vessel from combustion fan inlet to secondary chamber inlet
		<i>(MPF Only)</i> Entire primary chamber furnace from combustion chamber blowers to secondary chamber inlet
		<i>(DFS Only)</i> Entire kiln to connection with secondary chamber (includes BLAD)
	Secondary Chamber	<i>(LICs Only)</i> Entire secondary chamber vessel from flue gas inlet to flue gas outlet
		<i>(MPF Only)</i> Entire secondary chamber from primary chamber to PAS gas tram
		<i>(DFS Only)</i> Entire secondary chamber
Hazardous Waste Conveyance	Supply (Inflow)	<i>(LICs Only)</i> All piping, fittings, flanges, valves, filters and pumps from ACS tanks to primary injection nozzles
		<i>(MPF Only)</i> Immediate feed conveyor
		<i>(DFS Only)</i> Feed chutes from slide gates to kiln
	Discharge (Outflow)	<i>(MPF Only)</i> Immediate discharge conveyor <i>(DFS Only)</i> Entire heated discharge conveyor
Pollution Abatement System	PAS Flue Gas Tram	<i>(LICs Only)</i> Entire gas train from LIC secondary chamber to common stack (includes quench tower, venturi scrubber, scrubber, demisters and induction fans)
		<i>(MPF Only)</i> Entire gas train from secondary chamber exhaust to common stack (includes quench tower, venturi scrubber, scrubber, demisters and induction fans)
		<i>(DFS Only)</i> Entire gas train from secondary chamber exhaust to common stack (cyclone, quench tower, venturi scrubber, scrubber, denusters and induction fans)
	PAS Liquid Tram	All piping, fittings, flanges, valves, filters and pumps comprising the quench brine system and scrubber brine system, including brine piping to the BST inlets and PAS condensate lines to PAS-TANK-103



10 4 4 6

Miscellaneous Units

<b>Table 10-13</b>		
<b>Equipment Constituting Subpart X Miscellaneous Units</b>		
<b>Portion</b>	<b>Sub-Portion</b>	<b>Boundaries/Extent</b>
PMD	PMD Machine	Entire machine (not including electrical and hydraulic support systems)
	Supply (Munition)	Immediate conveyor
	Discharge (Munition)	Immediate conveyor
	Discharge (Energetics)	None
MDM	MDM Machine	Entire machine(not including electrical and hydraulic support systems)
	Supply (Munition)	Pick and Place Machine
	Discharge (Munition)	Pick and Place Machine
	Discharge (Buister Well)	BWIC Assembly
	Discharge (Agent)	All piping fittings, flanges, valves, filters and pumps from agent pump suction to boundary with continuous downstream HWMU (ACS Tank System)
BDS	BDS Machine	Entire machine (not including electrical and hydraulic support systems) including the Heel Transfer System and all its associated piping, fittings, flanges valves, filters and pumps
	Supply (Bulk Container)	Immediate conveyor
	Discharge (Bulk Container)	Immediate conveyor
	Discharge (Agent )	All piping fittings, flanges, valves filter and pumps from agent pump suction to boundary with continuous downstream HWMU (ACS Tank System))
Projo Cutter	Entire Assembly	Entne Projo Cutter Machine
DVS	Multi-Compartment Enclosure	Entire structure including spent decon collection and transfer system up to but not including the receiving <90-day accumulation tank
	Subpart CC An Pollutant Emissions System	Entire ductwork system from enclosure compartments, through carbon filter system and discharge of the ID fans
DVSSR	Multi-Compartment Enclosure	Entne structure including spent decon collection and transfer system up to but not including the receiving <90-day accumulation tank
	Subpart CC An Pollutant Emissions System	Entire ductwork system from enclosure compartments, through carbon filter system and discharge of the ID fans
Autoclave	Pressure/Vacuum Vessel	Entire vessel (not including electrical and hydraulic support systems)
	Condensate Collection System	From condenser discharges up to but not including the receiving <90-day accumulation tank

	Subpart CC Air Pollutant Emissions System	Entire ductwork system from vessel, through ejector, condensers, carbon filter system and discharge of the ID fans
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10 5

## **CLOSURE WASTE MANAGEMENT**

This section describes the methods which will be utilized during closure for

- 1) removing, transporting, treating, storing or disposing of the hazardous waste inventory,
- 2) determining the agent-exposure status of newly-generated wastes and debris, and
- 3) determining the agent-exposure status of equipment, buildings and structures that will be subject to general demolition

10 5 1

### **Wastes Generated During Closure**

Hazardous waste and hazardous debris generated during closure decommissioning, dismantling and decontamination activities that is not intended to be left in place for demolition will be managed and disposed of as prescribed for that applicable waste stream in accordance with R315-5-1 11 [40 CFR 262 11] for newly-generated waste or the WAP. Any remaining inventory of hazardous waste in the permitted storage will be also be removed and managed in accordance with the WAP. Equipment, structures and building materials that are left in place for demolition will not be declared as F999 hazardous waste/debris until demolition of the applicable building area or structure begins and the material has been containerized for transportation.

Table 10-14 summarizes the most common types of wastes that will be generated while performing decommissioning, dismantling and decontamination activities, but is not intended to be all inclusive. Waste and debris generated during closure decontamination and decommissioning, prior to demolition, will be initially divided into three major categories: liquid agent-exposed, vapor agent-exposed and non agent-exposed. The methodology for the evaluation and determination of agent exposure status is presented in Section 10 5 2.

Although equipment, buildings and structures will not have been declared hazardous debris prior to demolition provided the building and structure are intact, the status of the equipment, buildings and structures will be determined using the same methodology presented in Section 10 5 2.

Newly-generated wastes and debris will be categorized based on their agent-exposure status as determined in Section 10 5 2 and will be in accordance with Section 10 5 3.

<b>TABLE 10-14</b> <b>TYPES OF WASTE GENERATED DURING CLOSURE DECONTAMINATION AND DECOMMISSIONING (PRIOR TO DEMOLITION)</b>	
Spent decontaminant/rinsate	
Residue sludges	
Housekeeping waste	
Spent hydraulic fluid	
Electrical sensors not intended for reuse	
Concrete chips and residue resulting from scabbling, scarification, coring	
Tools, contaminated or no longer useful (debris)	
DPE suits (debris)	
TAP gear not reusable (debris)	
Paint and coating residue removed pursuant to concrete sampling	
Conveyors, hydraulic components, cranes removed from building, contaminated or not intended for reuse (debris)	
HWMU piping, valves, fittings removed from building (debris)	
Non-HWMU piping, valves, fittings removed from building, contaminated or not intended for reuse (debris)	
Concrete chunks removed from building (debris)	

10.5.2

## Evaluation and Determination of Agent-Exposure Status

Equipment and areas exposed to chemical agent will not automatically be considered agent-contaminated. The decision making process to determine whether equipment or waste (i.e., "material") is agent-contaminated is based on generator knowledge of the process, operational history, contamination and exposure history, agent monitoring and/or sampling and analysis results. Wastes generated outside the buildings that house HWMUs (e.g., miscellaneous support buildings) are unlikely to be agent contaminated, however, these wastes will undergo the process described in this section. The following steps will be used in the contamination assessment:

- 1 ***Step 1, Determination of Liquid Agent or Agent Aerosol Exposure*** – The first step in the contamination assessment will be to determine whether the material has historically been exposed to liquid agent or agent aerosol. Any material exposed to liquid agent or agent aerosol will be assumed to be liquid agent exposed and will be managed in accordance with Section 10.5.3.1. Areas that are known to have been exposed to liquid agent or agent aerosol include the TOX, TMA A, LIC-1 Primary Room, LIC-2 Primary Room, MPB, UMC, UPA, ECR A, ECR-B and the ECV. Otherwise, materials will be evaluated in Step 2.
- 2 ***Step 2, Determination of Agent Vapor Exposure*** – In step two, materials that have not been exposed to liquid agent or agent aerosol will be assessed for historical exposure to agent vapor. Materials with adequate historical monitoring records that have been historically exposed to agent vapors less than 1.0 VSL will be assumed to be currently agent-uncontaminated and will be managed in accordance with Section 10.5.3.3. Materials exposed to agent vapors  $\geq 1.0$  VSL will be evaluated in Step 3. A qualitative evaluation, as described in Step 4, will be required for materials that lack adequate historical monitoring data.
- 3 ***Step 3, Determination of Agent Vapor Exposure  $\geq 1.0$  VSL*** – In step three, a determination of whether the material has been exposed to agent vapors  $\geq 1.0$  VSL must be made. If the material has been exposed to agent vapors  $\geq 1.0$  VSL, and reliable and thorough historical monitoring records are available, then the material will be considered vapor-agent exposed and will be managed in accordance with 10.5.3.2. If, however, the material has been exposed to agent vapors  $\geq 1.0$  IDLH and liquid agent or agent aerosol was present, the item will be considered liquid agent-exposed and will be managed in accordance with 10.5.3.1. Otherwise, the material will be evaluated in Step 4. In the absence of reliable and thorough monitoring records, occluded spaces with agent exposures  $\geq 1.0$  IDLH will be presumed liquid agent-contaminated, removed and treated as a newly-generated P999 hazardous debris/waste.
- 4 ***Step 4, Conduct Qualitative Evaluation*** – In step four, materials for which historical monitoring records do not exist will undergo a qualitative evaluation. The qualitative evaluation will be used to determine the possibility of existing agent contamination on surfaces. The assessment considers the following:
  - Utilization of the equipment, unit, and/or area (i.e., type of process, operation, or risk)

- Historical documentation for similar operations
- Concentration of agent and duration of exposure
- Confidence in the monitoring data and in past management practices
- Material of composition (porosity, density, etc )
- Temperature of the environment
- Location of equipment or item considering the source of the agent vapor and the air flow direction

Materials determined to be potentially liquid agent-exposed through the qualitative evaluation will be managed as liquid agent-exposed, otherwise, they will be managed as agent-misccontaminated. All wastes will be managed in accordance with the agent exposure determination, as specified in Section 10.5.3.

### 10.5.3 Decontamination & Decommissioning of Equipment, Buildings and Structures

The strategy for decontamination and decommissioning of equipment, buildings and structures is based primarily upon their agent-exposure status.

#### 10.5.3.1 Management of Aerosol and Liquid Agent-Exposed Surfaces

One of the initial steps in the management of liquid agent-exposed equipment, buildings and structures is to conduct an occluded space survey. The occluded space survey will be used in order to identify confined areas within equipment, buildings, surfaces and structures that were exposed, or potentially exposed to liquid or aerosol agent and that have (or have had) the potential to contain liquid agent. The survey will consider operational knowledge as well as information gathered through site walkovers and/or facility drawing reviews. If the survey reveals that occluded spaces exist, steps such as equipment disassembly may be taken to reveal these spaces for decontamination.

Upon completion of the occluded space survey, a determination will be made whether to 1) decontaminate liquid or aerosol agent-exposed items or 2) declare them as P999 hazardous waste/debris and treat them in a permitted treatment unit. These liquid or aerosol agent-exposed materials shall not remain in-place for general demolition unless they are *effectively* decontaminated and demonstrated to meet the < 1.0 VSL screening criteria.

Materials that will remain in-place for general demolition may have been decontaminated in the past (e.g., during agent operations) or may be decontaminated during closure. During demolition, the resulting newly-generated demolition debris shall have been air monitored (prior to commencement of demolition) as described in 10.4.1 in order to be disposed at a permitted TSDF as F999 hazardous waste/debris.

Areas within the MDB that are known to have been exposed to liquid agent or agent aerosol include the TOX, TMA-A, LIC-1 Primary Room, LIC-2 Primary Room, MPB, UMC, ECR-A, ECR-B and the ECV. At a minimum, these areas will be

pressure washed or sprayed with the appropriate decontamination solution identified in 10.4.2 in order to decontaminate any residual liquid or aerosol agent contamination resulting from agent destruction operations

Concrete Consideration - Liquid agent-exposed concrete that underlies an applied coating (e.g., Epoloid) is subject to augmented direct sampling and analysis to verify that the coating successfully performed its function as an impervious layer. Only with this verification of the coating (to include cracks) will surface decontamination be deemed effective. Otherwise, the agent-contaminated concrete shall be subject to additional decontamination techniques as described in section 10.4.1.2

#### 10.5.3.2 Management of Vapor Agent-Exposed Surfaces

If it is determined that vapor agent-exposed materials will likely be difficult to decontaminate to the < 1.0 VSL criterion, the materials may 1) be assumed to be agent-contaminated, removed, declared P999 hazardous waste/debris, treated in a permitted treatment unit and disposed, or 2) undergo decontamination in accordance with 10.4.2 along with additional air monitoring. Additionally, vapor agent-exposed materials destined for thermal treatment as P999 hazardous waste/debris must meet waste acceptance criteria of the treating TSDF. Materials that are assumed to be vapor agent-exposed which will be removed for treatment at TOCDF will be declared as P999 hazardous waste and will be treated in a permitted treatment unit or placed in TOCDF permitted storage until permitted treatment is possible.

Buildings, structures and equipment that were only exposed to vapor agent which can be demonstrated to meet the unventilated monitoring screening criteria of < 1.0 VSL do not require additional decontamination prior to demolition and disposal.

#### 10.5.3.3 Management of Non Agent-Exposed Surfaces

Prior to final disposition of non agent-exposed equipment, buildings, and structures (i.e., not subject to P999 and F999 waste codes), a determination of whether the material contains any other listed or characteristic RCRA hazardous waste must be made. Those materials that do not contain any listed or characteristic hazardous waste may be removed and shipped offsite for reuse or recycling, may be removed and shipped to a solid waste landfill (i.e., Subtitle D Landfill), or may be left in place for future demolition. This will not include any TOCDF facilities where agent was stored or treated, or housed any HWMUs.

#### 10.5.4 Special Handling of Waste During Site-Wide Demolition Phase

##### 10.5.4.1 Demolition Waste Strategy

During in-process demolition and preparation-for-shipment activities (e.g., size reduction), the resultant debris shall be segregated to remove large and odd shaped solid materials such as steel structure and sheeting, equipment, rebar, concrete, asphalt and the like ("hard materials") leaving materials such as wood, insulation and the like in a separate pile ("soft materials"). Hard and soft materials will be recombined during container-loading as necessary to minimize void spaces within the loaded container. Should size reduction of the hard materials be unnecessary,

they may be loaded for shipment directly without segregation. Relocation of debris materials within the site shall be permissible provided dust control and wind-driven material mitigation measures are employed, as described in 10.6.5.2.

All newly-generated F999 hazardous demolition waste will be containerized and accumulated onsite in accordance with the "generator" requirements of 40 CFR 262.34 until such time within 90 days that the containers are transported to a Subtitle C Hazardous Waste Landfill.

10.5.4.2

#### Dust Suppression and Mitigation of Wind-driven Materials

Dust abatement during demolition and size-reduction activities will be accomplished through the use of water sprays sparingly applied so as to avoid run-off out of the HWMU-building footprint. Any resulting run-off of dust suppression water from the debris pile to surrounding soil shall be recorded. Judgmental closure verification samples will be subsequently collected in areas where dust suppression water run-off may have accumulated in order to verify that the activity did not contaminate the soil.

The "soft materials" shall be dampened with water as necessary during the work day and off-shift to prevent them from becoming wind-driven insofar as practicable. Efforts shall be made during in-process segregation to shake soft materials from hard materials such that hard materials can undergo size reduction without dampening.

10.5.4.3

#### Building Components and Equipment Temporary Laydown

Large building components and equipment in need of size reduction (to fit into roll-off containers) may be placed upon:

- 1) concrete slabs that are themselves destined for disposal under TOCDF closure, and
- 2) concrete slabs, asphalt, or soil provided the location is recorded and subsequent additional judgmental closure verification sampling is performed in order to verify that the activity did not contaminate the soil.

10.5.4.4

#### Timely Containerization of Demolition Waste

Once demolition has commenced, placement of the resulting debris into approved DOT containers (e.g., roll-offs, end-dumps) shall be accomplished in as timely a manner as demolition and size reduction activities allow. All soft materials susceptible to becoming wind-driven in spite of dampening will be containerized prior to the end-of-shift each day.

10.5.4.5

#### Recycling/Reclamation of Metal Components in Lieu of Disposal

Metal equipment and building pieces that are recyclable by reclamation (i.e., recovery of the metal content) are exempted from RCRA Subtitle C hazardous waste regulation per 40 CFR 261.6(a)(3)(ii). In order for the scrap metal to be recycled by reclamation in lieu of disposed as hazardous debris, all of the following conditions shall be met:

- 10.5.4.5.1 The scrap metal shall have met the requirements of this closure plan for disposal.
- 10.5.4.5.2 The permittee shall evaluate the potential for any agent hazards to demolition, transportation, and recycler personnel.
- 10.5.4.5.3 The permittee shall be able to demonstrate a known market for the scrap metal.
- 10.5.4.5.4 The permittee shall possess a contract with a legitimate recycler for receipt of the scrap metal including provisions for assurance of reclamation.

#### 10.6 GROUND-WATER MONITORING AND RUN-ON & RUN-OFF CONTROL

There are no disposal units associated with the TOCDF RCRA permit. No ground-water contamination is expected as a result of the TOCDF operations. Hence, although ground-water monitoring may be performed by DCD as a result of DCD operations, this closure plan does not address ground-water monitoring or any other long-term monitoring associated with the DCD Permit and previously identified SWMUs.

During the closure period, precipitation run-on and run-off control will continue to be accomplished through the maintenance of site grading and containment structures. During the demolition phase, run-off of demolition personnel-applied dust-suppression water and precipitation out of HWMU buildings and structures will be managed as described in 10.5.4.

#### 10.7 CLOSURE PLAN COST ESTIMATE

A closure cost estimate is not required for this RCRA Permit. State and federal governments are exempt from the financial requirements of 40 CFR 264 Subpart H in accordance with 40 CFR 264.140(c).

#### 10.8 POST CLOSURE

The closure plan is designed to accomplish a safe, risk-based clean-closure of the site. Further post-closure actions at the site are not anticipated. Any post-closure care resulting from activities not conducted pursuant to the TOCDF TSDF Permit will be addressed under the DCD Environmental Restoration Program.

#### 10.9 CERTIFICATION OF CLOSURE 140 CFR 264.115 and UAC R315-8-71



Within 60 calendar days of completion of TOCDF final closure, the Permittee shall submit to the Executive Secretary, by registered mail, a certification that the TOCDF facility has been closed in accordance with the specifications in this closure plan. The certification shall be signed by the Permittee and by an independent registered professional engineer. Documentation supporting the independent registered professional engineer's certification shall be furnished to the Executive Secretary upon request.

10 10

**CORRECTIVE ACTION FOR SWMUS**  
**[40 CFR 264.101]**

Other than the DCD solid waste management units (SWMUs) associated with CAMDS, discussed in the CAMDS Closure Plan Attachment 25, no SWMUs have been identified at the TOCDF site. All SWMUs within the DCD boundaries and corrective actions associated with them are incorporated in the DCD RCRA TSDF Permit. Ten (10) specific spill sites associated with TOCDF operations have been identified and are listed in Module VII. These spill sites will be verified clean-closed in accordance with this closure plan so that no post-closure corrective action will be necessary.



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
US ARMY CHEMICAL MATERIALS AGENCY  
TOOELE CHEMICAL AGENT DISPOSAL FACILITY  
11620 STARK ROAD  
STOCKTON, UTAH 84071

JUN 30 2010

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DEPARTMENT OF  
ENVIRONMENTAL QUALITY

Tooele Chemical Agent Disposal Facility

PM0483-10

SUBJECT Class 3 Modification to the TOCDF Resource Conservation and Recovery Act  
(RCRA) Permit, TOCDF-ATT 10-03-1111, TOCDF RCRA Final Closure Plan Revision, EPA  
ID UT 5210090002

Mr Scott Anderson, Director  
Utah Department of Environmental Quality  
Division of Solid and Hazardous Waste  
P O Box 144880  
195 North 1950 West  
Salt Lake City, Utah 84114-4880


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JUN 30 2010  
UTAH DIVISION OF  
SOLID & HAZARDOUS WASTE  
2010.02387


Dear Mr Anderson

In accordance with the TOCDF RCRA Permit requirement II K 1, this letter is submitted to the State of Utah Division of Solid and Hazardous Waste as the Class 3 Modification to the TOCDF RCRA Permit, TOCDF-ATT 10-03-1111, TOCDF RCRA Final Closure Plan Revision

If you have any questions regarding this issue, please contact Ms Sheila R Vance at (435) 833-7577 or Mr Trace Salmon at (435) 833-7428

Sincerely,

  
Joseph R. Majestic  
EG&G Defense Materials, Inc  
\*CERTIFICATION STATEMENT

  
Thaddeus A. Ryba, Jr  
TOCDF Site Project Manager  
\*CERTIFICATION STATEMENT

Enclosure

I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION THE INFORMATION SUBMITTED IS TO THE BEST OF MY KNOWLEDGE AND BELIEF TRUE ACCURATE AND COMPLETE I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS